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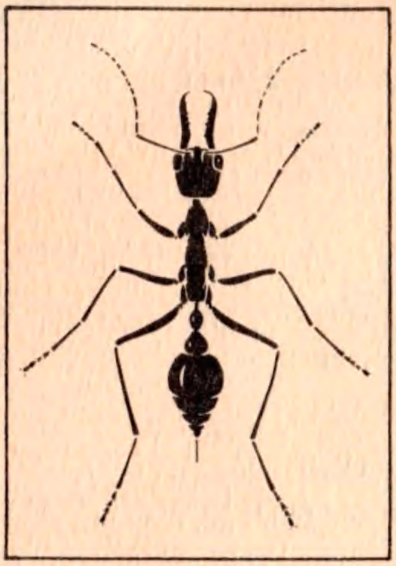

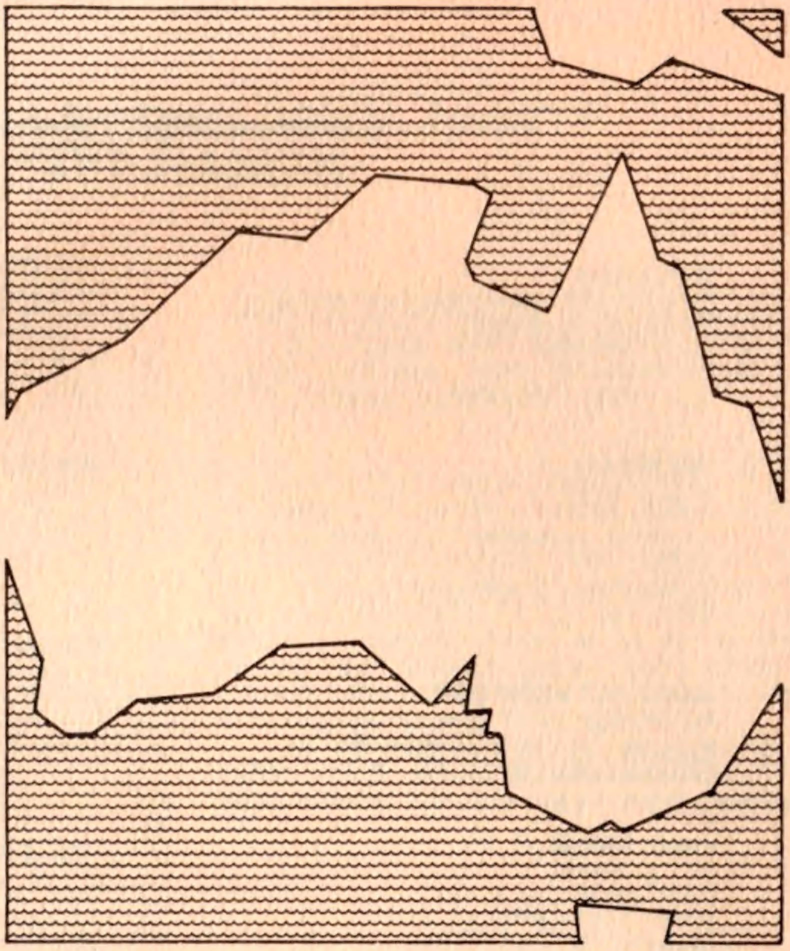

NEWS BULLETIN

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NEWS BULLETIN EDITOR

Dr G.B. Monteith
Queensland Museum
Gregory Terrace
FORTITUDE VALLEY QLD 4006

(07) 52 2716

(Office bearers continued on rear cover)

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AUSTRALIAN ENTOMOLOGICAL SOCIETY
NEWS BULLETIN

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COPY DEADLINE FOR NEXT ISSUE

Copy deadline for material for the February 1984 issue of the News Bulletin will be Friday, January 20, 1984. It is expected that a current membership list of the Society will be included as a Supplement to that issue. Please check your current address label which appears both on this Bulletin envelope and on the enclosed Subscription Form. Any changes required, no matter how minor, should be forwarded to me before January 20 also.

Geoff Monteith
News Bulletin Editor

ADVERTISING IN THE BULLETIN

Advertising space is available in the News Bulletin. A new, more flexible scale of rates is now offered as follows:

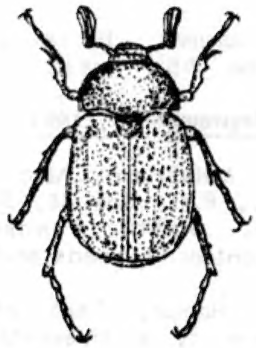
	Single Issue	Four Issues
Full page (15cm wide x 17cm)	$50	$150
Half page (15cm wide x 8.5cm)	$30	$ 90
Quarter page (7cm wide x 8.5cm)	$20	$ 60

In addition, inserts will be distributed with the Bulletin at $35 per time. These should be supplied folded so as not to project beyond the Bulletin pages and should be printed with "Supplement to the Australian Entomological Society News Bulletin".

All advertising must be approved by the Executive but should be submitted first to the News Bulletin Editor at his address opposite.

NOTICE

MATERIAL IN THIS BULLETIN DOES NOT NECESSARILY REPRESENT THE VIEWS OF THE AUSTRALIAN ENTOMOLOGICAL SOCIETY, AND SHOULD NOT BE REFERRED TO OR REPRODUCED WITHOUT PERMISSION OF THE AUTHOR OF THE MATERIAL.



EXECUTIVE REPORT

Meetings

The Executive met on July 21, September 8 and October 13, 1983.

Membership

Since the last Executive Report 8 new members have been elected. Total membership now stands at 650 and the geographic distribution is as follows:

NSW	145	SA	61	Overseas	57
QLD	146	WA	29	NT	12
ACT	95	VIC	77	TAS	25
Unknown	4				

New Members

We extend a warm welcome to the following new members:

Elected July 21, 1983

Mr S.J. Johnson, Oonoonba Veterinary Laboratory, P.O. Box 1085, Townsville QLD 4810. Stephen is a pathologist (veterinary) with the DPI and interested in the veterinary importance of insects and lepidoptera.

Mr P.A. Brookhouse, National Parks and Wildlife Service, P.O. Box N180, Grosvenor St., Sydney NSW 2001. Peter is mainly interested in the Odonata, having been involved with New England Fauna Taxonomy Survey for Odonata during 1975-77 and 1978-80. Peter is now also involved with environmental planning.

Mr R. Summer, F4/18 Elizabeth St., Dubbo NSW 2830.

Elected September 8, 1983

Ms J.A. Melksham, Alan Fletcher Res Stn., P.O. Box 36, Sherwood QLD 4075. Judith is interested in the biocontrol of weeds and behaviour.

Mr M.R. Hoque, Dept of Entomology, University of Queensland, St. Lucia QLD 4067. Mr Hoque is a student in the Department.

Mr I.J. Titmarsh, P.O. Box 1054, Mareeba QLD 4880. Ian is interested in modelling and simulation of crop pests especially Heliothis spp.

Elected October 13, 1983

Dr G.P. Fitt, CSIRO Cotton Res. Unit, Myall Vale via Narrabri NSW 2390. Gary was with the CSIRO during 1977-79 and with the NSW Dept of Agriculture between March and July of this year.

Miss T.V. Rangsi, CSIRO, Entomology P.O. Box 1700, Canberra City ACT 2601. Miss Rangsi is an assistant in the Lepidoptera Section of ANIC.

1984 SUBSCRIPTIONS

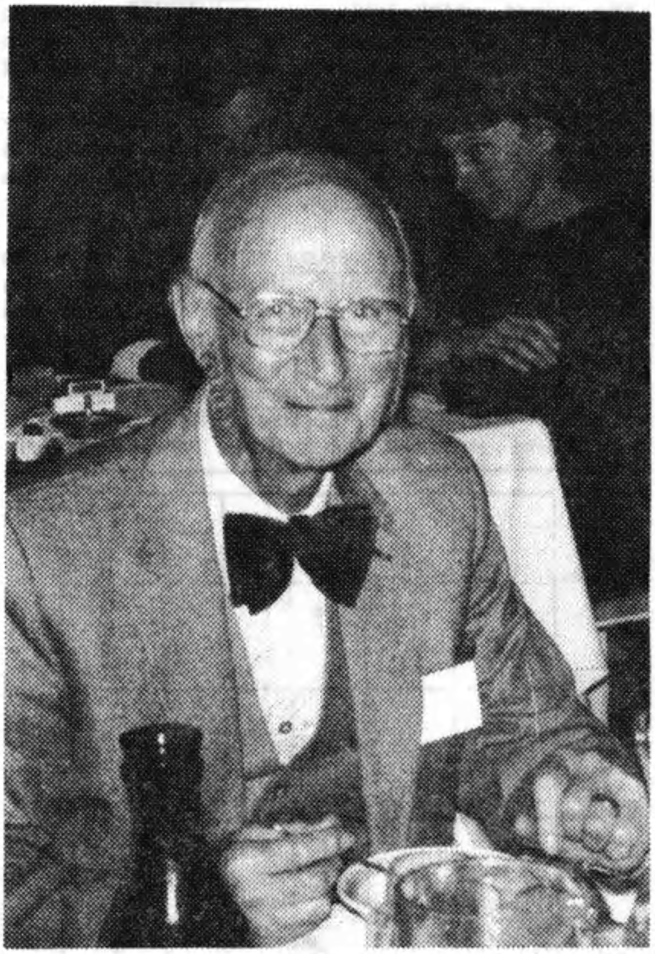
Society subscriptions become due and payable on January 1, 1984. A subscription form is enclosed with this News Bulletin. This bears a copy of your current name and address as stored in the Society's computerised membership list. Please enter any required changes (title, extra initials, surname, address, postcode, etc.) in the space provided. Any current arrears are also shown on the subscription form. Note that if you have not yet paid your 1983 subscription then this News Bulletin is the last we are permitted to send you under postal regulations. If you have also not paid your 1982 subscriptions then your membership may be terminated after January 1. If you have paid your arrears in the last month then please ignore those shown on the subscription notice. If you have any queries about your subscription status then please contact the Treasurer at his address inside the front cover.

Current Subscription rates are as follows:

	Normal Rate	If paid before March 1, 1984
Ordinary members	$30.00	$25.00
Student members	$15.00	$12.50
Retired members	$15.00	$12.50
Joint members	$35.00	$30.00

PRESIDENTIAL ADDRESS

FORTY YEARS OF MEDICAL ENTOMOLOGY



(Presidential Address by Professor D.S. Kettle to the Thirteenth Annual General Meeting of the Australian Entomological Society, Canberra, Australian Capital Territory, May 8, 1982).

Introduction

It is strange to be writing on such a topic as Forty Years of Medical Entomology; it seems to be an excellent topic for someone else but remote from myself, for I became a medical entomologist by accident. The entomology component in my undergraduate course was unexciting. Other courses were excellent, with genetics being given by Professor J.B.S. Haldane, F.R.S., and cytology by a youthful, up-and-coming Michael White, whose book on the 'Chromosomes' had just been published (White 1937) and who was latter to be appointed Professor of Genetics at the University of Melbourne and elected a Fellow of the Royal Society of London.

I graduated in July 1939 and within six months I was in the army. This gave the Medical Corps training officer a problem: how could the army best use graduates in biology? With a promise 'Don't phone me, the Colonel will phone you', I was sent away to be trained as a third class medical laboratory technician. After training I was posted to the Connaught Hospital where the pathology laboratory's main client was the VD Clinic. Two days a week, examining smears for gonorrhoea and one day decanting sera for the Wasserman test for syphilis, took some of the romance out of life.

But the training officer did telephone and I was sent to join a malaria field laboratory. Like the Austrian army an MFL had high ranking officers and few men. The full complement was twelve: a lieutenant colonel, three majors, four laboratory assistants (mostly graduates), two drivers and two batmen; overnight I became a First Class laboratory technician and corporal. It proved to be a valuable opportunity to work closely with leading research workers in tropical medicine.

Malaria in the Mediterranean 1941-45

My first Commanding Officer was George Macdonald, Director of the Ross Institute of Tropical Hygiene, who later became President of the Royal Society of Tropical Medicine and author of the book 'Epidemiology and Control of Malaria' (Macdonald 1957). Nearly 30 years ago Macdonald modelled the transmission of malaria and schistosomiasis.

The malariologist, J.W.S. Macfie, began his tropical medical career in West Africa in 1905, when it really was the 'white man's grave', so he must have been 60 when he volunteered to join the army. He was a world authority on the Ceratopogonidae, author of the common Australian species Culicoides victoriae Macfie and coauthor of four classical papers on the ceratopogonid midges of Ghana (Carter, Ingram and Macfie 1920, 1921). Macfie's collection of ceratopogonids and reprints are now in the British Museum. I did not realise, when I saw him every morning patiently collecting tiny midges from the windows of our laboratory in Egypt, that I would spend so many years working on the same group. Had I done so I would have paid more attention.

Nearer my own age was W.H.R. Lumsden, at that time a relatively inexperienced medical entomologist from the Liverpool School of Tropical Medicine. He was later to work with A.J. Haddow at the Rockefeller Virus Laboratory in Uganda, to become Director of the East African Trypanosomiasis Research Organisation and finally Professor of Medical Protozoology in London.

As the corporal I was told, 'You are the unit's clerk, there's the typewriter'. It was made specially for the army, an Oliver, not an Olivetti. The carriage had three positions; at ease, it gave lower case; raised it gave capitals and lowered it gave symbols and figures. My typing has never recovered from that traumatic initiation.

The chief malariologist in the Middle East was Brigadier J.A. Sinton, who was soon to be succeeded by Macdonald. Sinton won the Victoria Cross in the First World War and achieved distinction in tropical medicine in India. Generations of malariologists have been reared on 'How to do a Malaria Survey' by Christophers, Sinton and Covell (1939). Sinton published extensively on malaria and Kalar Azar, and was elected an FRS in 1946 and Pro-Chancellor of Queen's University, Belfast, in 1952. His PR work was faultless. He would come straight into the laboratory and greet the staff by name; the corporal then felt eight feet tall. Sinton had probably looked up our names before leaving his staff car; there was only one corporal so he could hardly go wrong.

The Unit was sent to Palestine where I spent a pleasant month with Lumsden surveying the Jordan Valley from the Sea of Galilee to the Dead Sea. I was promoted and sent back to Egypt to a new malaria laboratory. The entomologist there was the experienced Oskar Theodor, who, with Saul Adler, had transmitted tropical sore, Leishmania tropica, through the bite of Phlebotomus (Adler and Theodor 1957). Theodor is now in his late 70's and is still publishing monographs on Diptera (Theodor 1980).

My new commanding officer's experience of malaria had been in South India where the vector was Anopheles fluviatilis James which, as the specific name implies, bred in flowing water. To him malaria was associated with running water, and at his insistence we spent fruitless hours looking for Anopheles larvae in the sweet water irrigation canals of the Nile without any success. In Egypt the main vector was Anopheles pharoensis Theobald which bred in still-water vegetated areas, particularly rice fields. Indeed a sufficiently accurate map of the distribution of malaria in the Nile Delta was obtained by plotting the distribution of rice fields.

Anopheles pharoensis is a large mosquito and a strong flier which disperses widely. On two occasions in the summer of 1942 when the two armies were entrenched at El Alamein troops were attacked in the middle of the night by hordes of An pharoensis (Garrett-Jones 1950). The British accused the Germans of liberating infected mosquitoes and, as was

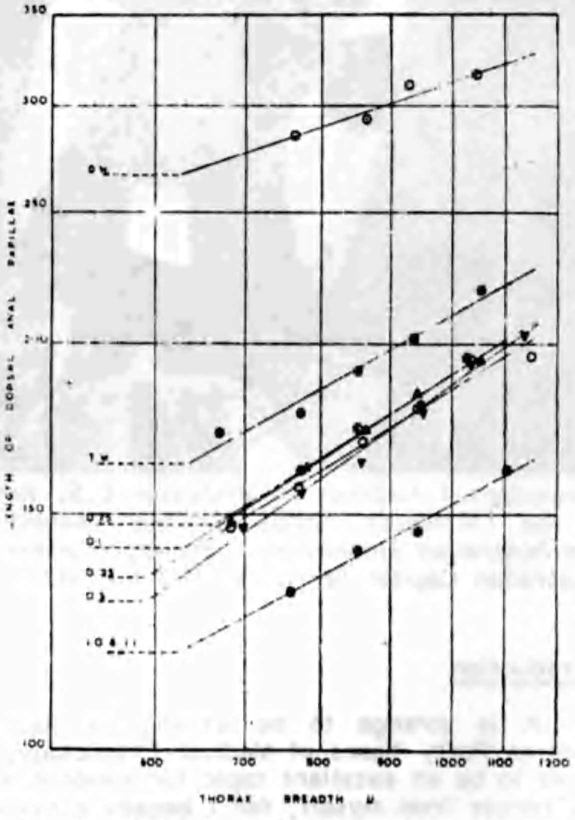


Figure 1. Growth in length of anal papillae of 4th instar larvae of An sergenti reared in diluted sea water equivalent to various concentrations of NaCl solution. From above downwards - distilled water; tap water; grouped together 0.1, 0.25, 0.5 and 0.75% NaCl; at bottom 1.0 and 1.1% NaCl.

learnt later from captured documents, the Germans similarly accused the British. By the time the entomologists arrived most of the mosquitoes had died but a few were recovered alive at Burg el Arab. The explanation was that large populations of An pharoensis bred in the Wadi el Natrun. Under normal conditions the westerly and south-westerly winds carried this population into the delta where they mingled with the existing population. On the two nights in question the wind blew steadily from the south-east carrying An pharoensis from the Wadi el Natrun to the war zone in the desert west of Alexandria.

While marking time in Egypt I became interested in the use of the length of anal papillae as a character for the identification of mosquito larvae and decided to investigate their growth relative to other parts of the body and also in water of different salinities (Fig. 1). To this end I studied the growth of Anopheles sergenti Theobald, making measurements on 125 larvae in each of the four instars. This gave 500 sets of measurements and with each set containing seven items there were 3,500 measurements for analysis (Kettle 1948). For the next three years I toured the Mediterranean clutching Ronald Fisher's 'Statistical Methods' and an Italian book of five figure log tables doing regression analyses of logarithmically transformed data long hand. It both kept me out of mischief and earned me an M.Sc. degree while still in the army.

I must relate one incident which will horrify taxonomists. Theodor and the biologists had built up a first class collection of the mosquitoes of Egypt, mainly culicines. When the time came for the unit to move west-wards the C.O. insisted that the entomological pins be removed. Their recovery meant the destruction of the entire adult collection. We were, he said, a malaria unit and culicines did not carry malaria.

The insects had their revenge and the C.O. was hospitalised with tropical sore, the disease whose transmission by sand flies Theodor had discovered. The authorities decided that it would be unwise to expose Theodor, a Prussian Jew, to the possibility of capture by the Germans. He was replaced by Lumsden.

The unit that participated in the invasion of Sicily had George Davidson as the sergeant. George had since distinguished himself in the analysis of Anopheles species complexes especially that of the African Anopheles gambiae Giles. He is author of a book on 'The Genetic Control of Insects Pests' (Davidson 1974) and is currently Professor of Medical Entomology in London.

In Sicily I was on survey with Lumsden when towards evening we came to a blown bridge over the Gornalunga River, and in our ignorance proceeded to cross the dry river bed. We did not get far. A mine blew off a rear wheel, wrecked the truck and threw me out.

After surgery and convalesence I returned to Italy and was commissioned as a Medical Entomologist. The main vector of Malaria in Europe was Anopheles maculipennis Meigen. During the 1920's and 1930's Italy had been the centre of work on this puzzling species. In the coastal marshes of the Volturno north of Naples and the Pontine marshes south of Rome thousands of An. maculipennis could be collected in stables and the local people were riddled with malaria. In a similar location near Pisa thousands or apparently the same mosquito were present but there was no malaria. The puzzle was, why not?

The answer was that Anopheles maculipennis was a complex of six species identifiable solely on the pattern of the eggs which the female laid. Three species bred in salt water and two of these. An sacharovi Favre and An labranchiae Falleroni were efficient vectors of malaria. The third, An atroparvus Van Thiel, was a minor vector. The three freshwater species were zoophilic and did not transmit malaria (Hackett 1937).

Our laboratory was in the Instituto di Malariologia where Giulio Raffaele had worked tirelessly searching for the exoerythrocytic cycle of human malaria. He was treating tertiary syphlitics with malaria, and searching for developing parasites in their bone marrow (Raffaele 1951). He had no shortage of patients, who, it was said, included Il Duce, Benito Mussolini himself, but Raffaele was looking in the wrong organ. We know now that the EE stages occur in the liver, but under Italian law it was illegal to biopsy the liver.

Scotland 1947-61

After the war I had a brief flirtation with the commerical world before going to Scotland to undertake research on the Scottish midge, Culicoides impunctatus Goetghebuer, for the Department of Health for Scotland. It is widely believed that it was the combination of biting midges and the wearing of the kilt that gave rise to the Highland Fling.

C. impunctatus is a wild species with only a small proportion of the population coming indoors. Therefore house spraying with residual insecticides, which had worked so well against domestic mosquitoes, would be ineffective. Promising results had been obtained against wild mosquitoes by barrier spraying, in which a belt of vegetation around the area to be protected was sprayed with a residual insecticide. It was worthwhile to find out whether this method could be used to protect human communities against *C. impunctatus*. In theory as the midges moved towards the inhabited area they would rest on treated vegetation, absorb insecticide and die.

Such a method might work well in the open but be less effective in wooded areas. Two experiments were conducted both involving adjoining areas of woodland and moorland. The *C. impunctatus* populations were assessed by sticky traps mounted at three heights (0.6, 1.8 and 3.0 m) at 44 catching stations. They yielded 67,000 *C. impunctatus* over the season.

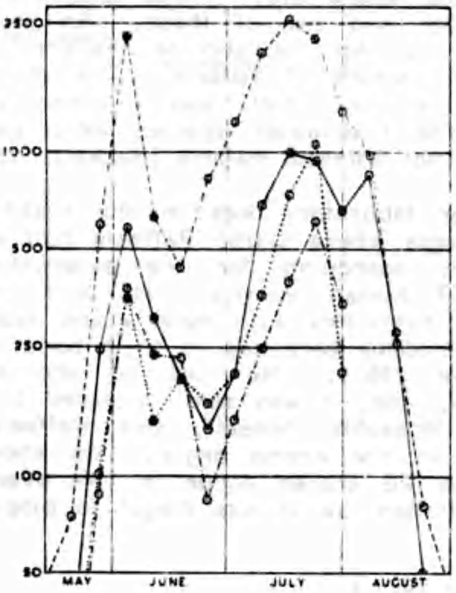


Figure 2. Weekly catches of female *C. impunctatus* (log scale) in woodland (broken line) and moorland (continuous line) of site 1, and woodland (dash dot) and moorland (dotted line) of site 2.

In the first area the *C. impunctatus* population built up to a peak in the first week of June (Fig. 2). We sprayed in the next week and down went the catch. It went down in both the sprayed and the unsprayed areas but that could be easily explained. If midges moved around more than we suspected then spraying could produce a reduction in the unsprayed area. Fortunately there was the second area. Here too the *C. impunctatus* population built up to a maximum in the first week of June. No spray was applied but still the population declined until the end of June when we did spray. This had the opposite result to that expected and the population built up to a peak at the end of July. Clearly the experiment had failed abyssmally (Kettle 1949). But so completely had it failed that it was possible to regard all of the observations as having been made on an untreated population.

On the assumption that the gradient in midge density between traps was logarithmic, lines of equal midge density could be drawn.

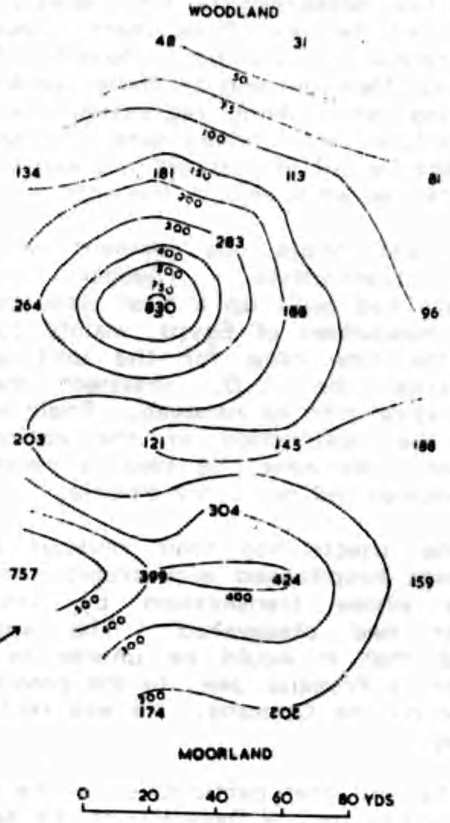


Figure 3. Distribution of female *C. impunctatus* at Bannachra.

The patterns were subsequently the same for both sexes and sites and there was a regularity in the way in which density fell off with distance. This was particularly intriguing in the woodland at Bannachra where the isomidge lines were concentric suggesting that the population was originating from a small area.

In theory this centre of origin could be found in the same way as finding the centre of a circle by erecting perpendiculars on lines connecting points of equal midge density. The interesting result was that five out of six perpendiculars intersected at the same place and a search was then made to locate the postulated centre for breeding. It proved to be to the west of the expected position (Kettle 1951). This could be explained by the prevailing south-westerly wind carrying the population to the woodland nearer to the postulated centre.

With certain corrections it was possible to plot catch against distance from the actual centre of breeding. In woodland the density of C. impunctatus fell to one-tenth of its original value at 60 m and to one-hundredth at 120 m. This limited dispersal offered the possibility of controlling C. impunctatus by spraying breeding sites within a modest distance of the location to be protected. This was tried but failed. The flight range of C. impunctatus over moorland, where it can be carried by the wind, proved to be of a different order to its flight through woodland where it is dependent on its own strength.

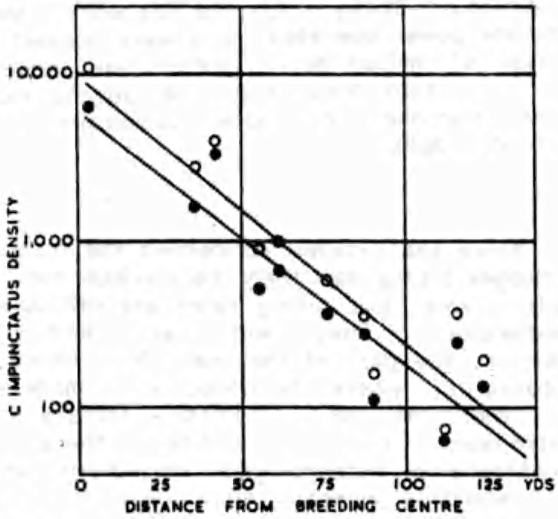


Figure 4. Dispersal of female (closed circles and male (open circles) through woodland at Bannachra.

Wind dispersal was confirmed later when traps were erected up to 1080 m from breeding sites in the direction of the prevailing wind and there was no obvious relationship between midge density and distance; instead increased catches were associated with the presence of hosts (Kettle 1960).

Larval taxonomy

Having worked with mosquitoes it was only natural for me to expect to be able to identify the immature stages of biting midges. Indeed it was even more important to know these stages for ceratopogonids than it was for culicids because biting midges spend many months in the immature stages and only days or weeks as adults. Any ecological study that ignored the immatures was bound to be unbalanced.

Very little information was available on the immatures of the British Culicoides and some of that was wrong. Goetghebuer (1919) had described the larva of Culicoides pulicaris (Linnaeus) as having long perianal bristles and a long narrow head. He had made the fatal mistake of assuming that larvae and pupae collected at the same time were the same species. The pupae gave rise to Culicoides pulicaris but the larvae belonged to a different tribe. Edwards (1939) listed 29 species of Culicoides in the British fauna.

In the space of 4 years the late Bill Lawson and I found and described the larvae and pupae of 25 of these 29 species and for good measure added the immatures of 3 new species. Our keys to the larvae and pupae of

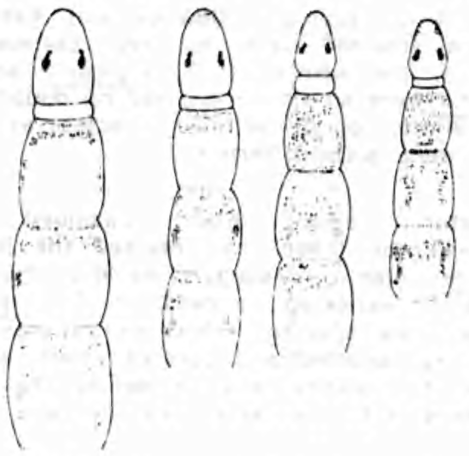


Figure 5. Fourth instar larvae of four different species of Culicoides.

5 genera of vermiform ceratopogonids and 28 species of Culicoides were the first of their kind for any faunal region in the world (Kettle and Lawson 1952). Later two more new species were first recognised in the larval stage and proved to be equally distinct in the adult. This was spin-off from a strongly applied research programme.

The larval characters used were the colour, size and shape of the head, the structure of the epipharynges and the pattern of pigment in the thorax. Nowadays these features are recorded in colour on 35 mm film with consummate ease but in the 1940's it was a matter of balancing a ¼-plate camera on a monocular microscope and recording the larva's appearance in black and white on glass-backed negatives (106 × 81 mm).

There were some interesting anecdotes associated with this work. I had been most impressed by the fact that Edwards had recognised C. truncorum Edwards as a new species on the basis of very few specimens. When we found the breeding site it proved to be the commonest species there and any doubts regarding its validity disappeared. There was one niggling doubt in that Edwards described his material as being considerably larger than ours. Indeed his measurements were larger than the material he studied in the British Museum! When I mentioned this to dipterists at the Museum they laughed and said 'Don't be too concerned, Edwards never actually measured any specimens'.

The taxonomic value of larval characters was demonstrated in one of our new species which was so very like Culicoides pulicaris in the adult that in a light-hearted moment we called it C. lupicaris Downes and Kettle, a practice frowned upon by real taxonomists. Although the adults of C. lupicaris and C. pulicaris were so similar we had no doubt as to the validity of these two species as their larvae were quite different.

Later, after Alan Campbell and Pelham-Clinton (1960) had revised the British Culicoides Alan confessed to me that they had confidently expected to demolish C. lupicaris as a separate species. However the result of their very detailed and careful study was to confirm its validity and to define the adult characters of C. lupicaris more precisely.

Edinburgh had been an active centre for midge research for many years. The city is proud of containing Arthur's Seat, a large open park, within its boundaries. It was therefore a great surprise to find that the dominant Culicoides larva in the marshy edge of Duddingston Loch at the foot of Arthur's Seat, belonged to an undescribed species, which we named Culicoides duddingstoni Kettle and Lawson (1955). Since then this species has been found elsewhere in Britain, in France and in the Caucasus.

Jamaica 1959-60

When I became a lecturer at Edinburgh University my involvement in medical entomology was broadened to include teaching postgraduate courses in tropical medicine and tropical veterinary medicine. Edinburgh is a pleasant city but by no stretch of the imagination tropical. I was anxious to gain tropical experience and was seconded to the Government of Jamaica for two years to establish a research unit to investigate their sand fly problem. The Jamaican government was not the most speedy of correspondents and I became agitated as the time for my departure drew near and no contract arrived. This was reflected in a telegram sent by the Colonial Office to Jamaica which ended with the laconic phrase 'Kettle boiling'.

Montego Bay on the north coast of Jamacia was the millionaries' playground in the Caribbean. Millionaires react very unfavourably to being bitten by midges. Control measures were being undertaken but the biological information on which they were based was meagre. There was urgent need to have a sound method of estimating midge populations. Sticky traps did not work. More elaborate power operated traps were impractical because of limited power outlets and electric fans in suction traps could be put to much better purposes by local Jamaicans than catching midges.

Since the problem concerned the numbers of midges biting man then the obvious tool was a biting rate, but biting rates are difficult to standardise. They will vary with the collector, the part of the body from which he is collecting, where the collection is made and the time of day. These factors are controllable, but in addition there are uncontrollable meteorological conditions which can determine whether any biting occurs at all. Above these there are the biologically important daily, monthly, seasonal and annual variations.

Figure 6. Catching team. From left to right Scott (S), Linley (L), Castle (C), Kettle (K) and Daniels.

Three species were involved - *Culicoides furens* (Poey), *Culicoides barbosai* Wirth and Blanton and *Leptoconops becquaerti* Kieffer. The catching team included two dark West Indians, Trevor Castle and Wally Scott and two Caucasians, John Linley and myself. A third West Indian, Keith Daniels, read the meterological instrument.

The site on Florida Beach was open and more or less uniform with the four catching stations being placed at the corners of a square with sides of 18m. Even so, although two of the species, *C. furens* and the *Leptoconops* were present in equal numbers in all four stations. *C. barbosai* was significantly more abundant in positon four (Kettle and Linley 1967, 1969a, 1969b).

Collecting was done with the collector sitting on the ground and either collecting from the arm, elbow to wrist, or the leg, knee to ankle. Collections were made over a period of fifteen minutes. Catches of 100 were commonplace and on three separate occasions different individuals caught 750, a biting rate of 3000 an hour. In spite of the fact that during collecting the arm rested on the knee the three species showed marked preferences for different limbs. *C. barbosai* was 50% more abundant on the arm compared with the leg. *C. furens* showed a similar preference for the

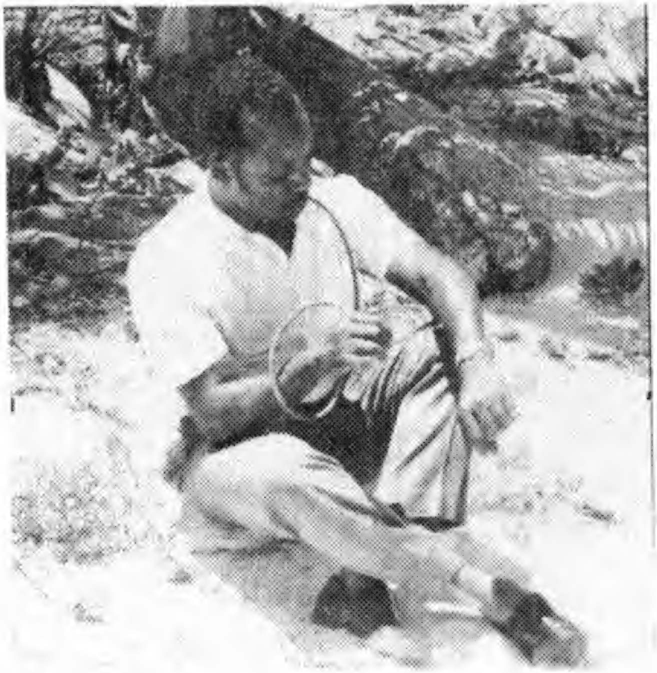


Figure 7. Castle collecting from the arm.

leg where it occurred on the shaded, under side, while Leptoconops preferred the sunny upper surface of the leg and was scarce on the arm. These differences occurred simultaneously in the morning.

The relationships between collectors and species were complex (Fig. 8). All three species were attracted least to Scott at all times, but they differed as to how they rated the others. In the morning Culicoides barbosai did not differentiate between Castle, Linley and Kettle. Leptoconops becquaerti preferred the Caucasians to the Jamaicans while C. furens was attracted in significantly greater numbers to Castle than to Kettle who caught significantly more than Linley who caught significantly more than Scott. At sunset only the two Culicoides species were active and as the light faded both species found the larger, fairer Linley easier to find and he caught significantly more in the collecting periods immediately after sunset. At night C. furens was caught in equal numbers by Castle, Linley and Kettle which is strikingly different from the morning response of the same species to the same collectors.

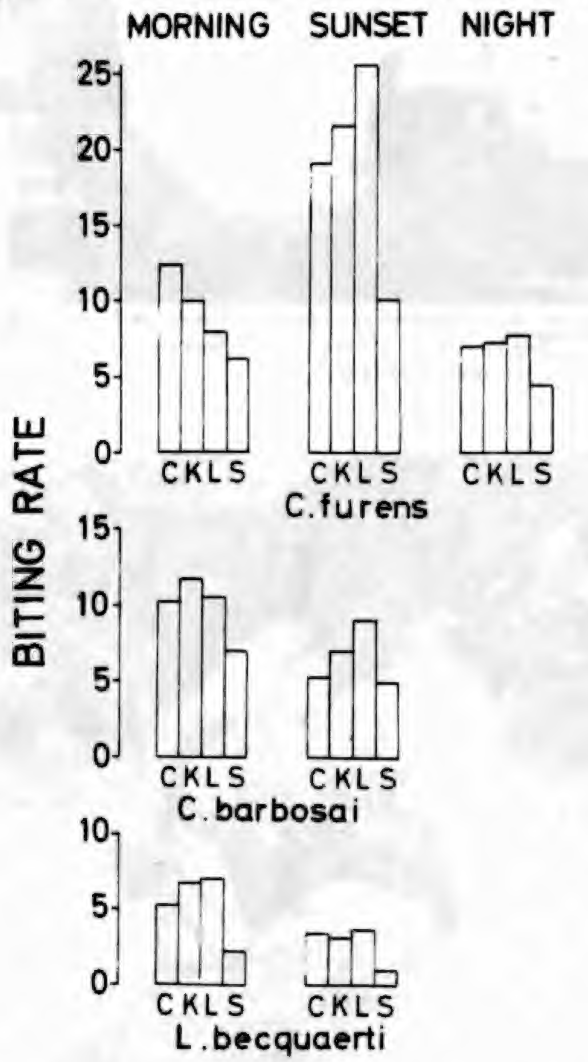


Figure 8. Mean catches (M_w) of C. furens, C. barbosai and L. becquaerti made simultaneously by four collectors, Florida Beach, Jamaica.

No simple generalisations are possible. Each species responds to conditions differently. All species probably receive similar sensory information but give it different weight leading to distinctive specific patterns of behaviour.

Perhaps the most important result of this work in Jamaica was its effect on those involved. John Linley came to me on graduating from the University of West Indies and has now published excellent work on blood-sucking midges for more than 20 years and has been awarded the D.Sc. degree by London University. The three Jamaicans realised that being a scientist was better than working and went on to university studies. After postgraduate training in London Trevor Castle returned to Jamaica to take charge of the research unit.

Man-made biting midge problems

During my stay in Jamaica, the owner of the Royal Caribbean Hotel decided to do his own midge control. His hotel was surrounded by a mangrove swamp breeding Culicoides furens, so he decided on an ambitious programme of cutting down the mangroves, sand-filling the swamp and establishing a marina to attract wealthy American yachtsmen.

He got rid of Culicoides furens but to his dismay Leptoconops becquaerti took over and the last state was worse than the first. Previously L. becquaerti had not been established in the hotel area. C. furens bit in the early morning before the guests were on the beach and in the evening it chased them off the beach into the bar to the profit of the hotel. L. becquaerti bit all day long, remaining active in winds of up to 5 m/s and found the backs of procumbent sunbathers irresistible.

No information was available on L. becquaerti in Jamaica and very little for anywhere else in the world. The research unit spent most of the next five years elucidating the biology and bionomics of *Leptoconops becquaerti*. With a clear conscience I could declaim, 'You did not seek advice before modifying this habitat'. In more reflective moments I wonder what sort of advice the hotellier would have got if he had asked. Would we have had the foresight to advise him correctly? Filling can be a satisfactory method of dealing with mangrove swamps but needs to be extended to a height of 30" above the water table, and the surface sealed with marl and grassed.

Of course this could not happen here in Australia. We fell the mangroves, fill the swamp with dredged sand to the required depth and then grass the area. All midge breeding has been eliminated. But then we create canal estates, dissecting the old swamp with a series of boat channels.

For coastal swamp filling the Department of Harbours and Marine lays down the minimum height above mean sea level for the retaining wall, but does not say where the retaining wall should be located. The physical height of the wall will vary with its position with respect to the tide range. The nearer it is located towards mean high water springs the lower the wall need be and the cheaper its construction. This however leaves a stretch of intertidal sand between the wall and the canal.

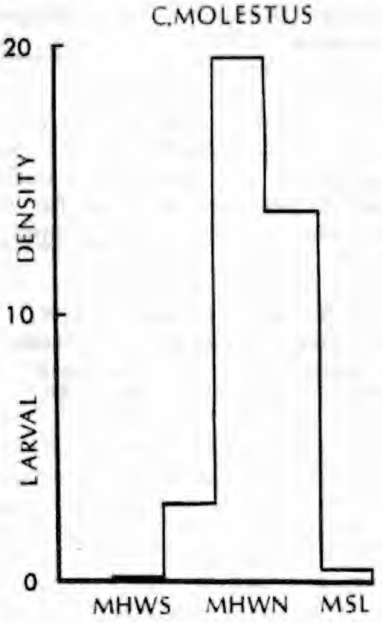


Figure 9. Distribution of *C. molestus* larvae with respect to tide range. MSL, mean sea level; MHWS and MHWN mean high water springs and neaps respectively.

In south-east Queensland we have two man-biting species of *Culicoides* which reach pest proportions, and which breed in intertidal sandy soils. One, *Culicoides molestus* (Skuse) breeds in almost pure sand in a relatively narrow band of the tidal range around mean high water neaps (Kettle et al. 1979). The other species, *Culicoides subimmaculatus* Lee and Reye, is associated with a more muddy sand substrate at a slightly higher tide level and in association with a surface-tunnelling soldier crab. With the passage of time condition in the canals could also favour this species.

Canal development provides these two species with breeding sites in close proximity to their favourite host, man. What more can they ask? On the Gold Coast one has already accepted the invitation and the other is seriously considering moving in. This problem could have been averted quite easily by insisting that the retaining wall be built at mean tide level.

Conclusion

This account of one entomologist's career looking back over 40 years may give the illusion of a steadily unfolding story with an inner logic of its own comparable to the development of an organism. During the unfolding the logic was not so apparent to the main character. It was a question of accepting and adapting to unavoidable and potentially unpleasant situations, such as war-time national service, and accepting or refusing challenges incorporating elements of choice and risk. Opportunities come infrequently and always at inopportune times, but one positive response leads to another challenge; there is no going back and opportunities are rarely repeated. When I graduated I did not set out to work and travel so widely, in the Mediterranean, the West Indies, East Africa and Australia, but it happened, and in retrospect I would not have it otherwise. I hope that the young entomologists in the Society will find similar satisfaction and pleasure in their careers. The job situation is not good but it was worse in 1936 when acceptance into the Zoology Honours School was on the clear understanding that there would be no job in Zoology on graduation.

Teaching, even at University level, tends towards generalisations in response to the overwhelming volume of information available, but be suspicious of generalisations and expect to meet exceptions. That is the counsel of perfection and all of us generalise from our experience. The unique nature of each biological situation was expressed in a dictum attributed to Sir Malcolm Watson, based on his experience in Malaya: 'Every malaria problem is a local one'. This is probably true for many environmental problems which tend to be local ones. We may transfer principles from one situation to another but solutions have to be designed to suit local conditions. Our greatest handicap is our self-deception when we think we know. and we merely have the beginnings of understanding. That, as my wife would say, is a sufficiently pontifical note on which to end.

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ADDRESS CHANGES

Please help us to address your Society publications correctly by promptly forwarding to the News Bulletin Editor any changes or corrections to your current title, name and address. This is particularly important at this time because we hope to produce an up-to-date list of members with the next News Bulletin.

In the follow list of up-dates the state or country of previous address is given in parentheses.

MR R.S. BUNGEY, 100 Finniss Street., North Adelaide, S.A. 5006 (S.A.).

MRS C. NEILSEN (nee CASTLE), 57 Cadell Street, Wondai, QLD 4606 (QLD).

MR M.B. FLETCHER, 32 Bindaga Place, Aranda, ACT 2614 (ACT).

MR J.T. HAMILTON, Biological and Chemical Research Inst., PMB No. 10, Rydalmere, NSW 2116 (NSW).

MISS L.F. QUEALE, 18 Toowong Avenue, Kensington Park, S.A. 5068 (S.A.).

Mr G.D. RIPPON, 10/11 Kitchener Street, Netherby, S.A. 5062 (S.A.).

DR R.J. ROBERTS, CSIRO Division of Entomology, P.O. Box 1700, Canberra, ACT 2601 (NSW).

DR P.R. SAMSON, DPI Entomology Branch, Meiers Road, Indooroopilly, QLD 4068 (S.A.).

MR D.P. SINCLAIR, Dept. of Plant Pathology and Agricultural Entomology, University of Sydney, NSW 2006 (QLD).

DR D.E. SWINCER, Dept. of Agriculture, G.P.O. Box 1671, Adelaide, S.A. 5001 (USA).

MRS S.L. WENTWORTH, 274 Anzac Avenue, Sassafras, VIC 3787 (VIC).

MISSING MEMBERS

We have lost contact with the following members. It would be appreciated if anyone knowing their current address could advise the New Bulletin Editor at his address inside the front cover.

Miss D.A. Davis (formerly of Kew, Vic).
Mr P.J. Deighton (formerly of Tamworth, NSW).
Mr M.B. Debowski (formerly of Winterford, WA).
Mrs J. Tan Choo Haw (formerly of Singapore).

CORRECTION

A small, but important, error crept into the "Procedures for the Nomination and Selection of Recipients of the Ian Mackerras Medal" as reproduced on pp. 48-49 of the August News Bulletin (Vol. 19, part 3). The second sentence of Paragraph No. 11 on p. 48 should read:

> "Through the Convenor, the Panel may request additional information on any candidate from the proposers and may seek the opinion of referees of its own choosing".

REGIONAL NEWS

AUSTRALIAN CAPITAL TERITORY

CSIRO Division of Entomology

There have been a few more comings, goings and role changes among the residents of the ANIC. On 9 September, Bob Taylor resumed his role as Taxonomy Section Head, freeing John Lawrence of his 16 week stint in that capacity. The switch also allowed John to disappear on a two month tour of the world in late October. His agenda included studying types at the BMNH, visiting Harvard University to examine specimens, attending a symposium and workshop on Classification and Phylogeny of the Coleoptera (which is in honour of J.L. Le Conte) in Detroit and Columbus, USA, followed by quick jaunts to Berkeley, San Francisco, Honolulu and Ottawa to study specimens and to discuss beetle classificatoin with colleagues. John will return just in time for Christmas.

In mid September, Ray McInnes was appointed Services Co-ordinator of the Taxonomy Section. This is a half-time position since Ray is still associated with the research programme on the Ecology and Control of Dung and Dung-breeding Flies. In the Taxonomy Section, Ray performs many of the non-taxonomic tasks that used to be done by Murray Upton. Murray is now firmly entrenched in his new administrative role.

Ebbe Nielson departed for a month in South America in late September. He presented a paper at the Lepidopteran Congress associated with the 9th Latin American Congress of Zoology and indulged in much moth collecting as well.

The inmates of the ANIC gladly welcome Ms Anne Hastings, who has joined the Division recently as a taxonomic illustrator. Anne is from the Launceston Museum in Tasmania.

There have been a number of visitors to the ANIC in the last few months. In late July, Graeme Browning from the Department of Zoology at the University of Adelaide visited the ant section to examine specimens of *Myrmecia*. Also at the end of July, Dr H.F. Howden and Mrs Anne Howden of Carleton University, Ottawa, Canada, and Geoff Holloway of the Australian Museum were engaged in field work in western NSW and paid a brief visit to the ANIC. The Howdens were interested in geotrupids and weevils.

In early August, Dr Jeyaraney Kathirithamby from Oxford University, England, joined the ANIC for four and a half months; she is studying Strepsiptera. Also in August, Prof. L.P. Brower gave a Divisional seminar on the Monarch butterfly, and in late August/early September, Fred McDonald spent four days in the hemipteran section of the ANIC examing pentatomids. Earlier in the year, one of Fred's Honours students, Mark Stevens, visited the ANIC to look at eurymelids.

Two entomologists made brief visits to the ANIC in early September. Dr P.S. Ward from the Department of Entomology, University of California, Davis, USA, spent time studying *Rhytidoponera* species from north Queensland and also gave a seminar on *Rhytidoponera* from New Caledonia. Dr R. Matthews from the University of Georgia, USA, examined Australian Pemphredoninae as well as giving a talk to the Taxonomy Group on the sphecid wasp, *Microstigmus comes*. In mid September, Geoff Monteith and David Yeates from the Queensland Museum spent five days working on material from the Earthwatch Bellenden-Ker collections, which had been identified by the ANIC taxonomists.

Congratulations to Bruce Champ and Maree Beer, who were married on 1 September.

Dr John Casida of University of California, Berkeley visited the Division. He is a well-known authority on metabolism of insecticides. Dr Howard Dengate of NZ Wheat Research Institute also visited. He talked with members of the Stored Grain Research Laboratory on possible avenues of research in grain technology and storage for New Zealand. Dr Valmayor, Dr Batugal and Dr de Padua from the Philippines Council for Agricultural Research and Resources came to the Division to discuss biological control of weeds and grain storage in conjunction with ACIAR funded projects.

Aust. Nat. Univ. - Zoology Dept.

Congratulations to David Crawford who has been awarded a M.Sc. for his thesis entitled: "Insect communities of lucerne, *Medicago sativa* L., in the Australian Capital Territory."

In late August, Penny Gullan spent a week in Budapest, Hungary, attending the IV International Coccidology Symposium which was part of the X International Symposium on Entomofaunistics in Central Europe. Penny presented a paper on Australian gall-forming coccoids at the symposium. She then spent three weeks examining Australian coccoid specimens at the BMNH in London. Penny Knox has commenced a short term position working with Penny Gullan on the Coccoidea of the National Botanic Gardens in Canberra.

Penny Gullan & Jonathon Banks
Regional Councillors

VICTORIA

Museum of Victoria, Entomology Department

Activities in the department since the last report have been mainly curatorial and research report writing although with the approach of warmer weather preparations for summer field work are under way. The first of these trips will be to collect in the Mildura, Broken Hill and Parkes areas. During September Ken Walker visited the Department of Entomology, University of Queensland to renew acquaintances with both the staff and the bee collection.

Recent visitors to Entomology have included Prof. E.I. Schlinger, Department of Entomology, University of California, Berkeley (Acroceridae) and Dr M.E. Irvin, Illinois Natural History Survey, Champaign, Illinois (Therevidae). Both spent time in the department checking the collection before departing on a collecting trip through north Western Australia and central Northern Territory. Mr I.D. McLellan from Westport, New Zealand also made a brief visit to examine the Plecoptera collection.

It should be noted by authors intending to use the abbreviation of our museum name that it is no longer NMV but rather MVM (i.e. Museum of Victoria, Melbourne).

Museum of Victoria, Biological Survey Dept.

Two of the most diverse but little known habitats for arthropods are freshwater streams and forest litter. The Biological Survey Deparment is working on the distribution and ecology of the fauna of these two habitats. While a reference collection and catalogue of species is being built up, most studies also aim to answer questions of importance in stream and forest management.

Three major river projects have just been completed: the effects of dam construction and operation on benthic invertebrates in the Mitta Mitta and Thomson River, and the impact of various factors (especially the input of heater water) on invertebrates of the LaTrobe River. John Blyth has two main current research interests: First, the impact of fine sediment on the structure of stream-beds and on benthic insects, especially in relation to clearfelling in the catchments of small mountain streams. Secondly, the development of a system for rapid description of physical and botanical features of streams and rivers. This system is used for conservation appraisal, and as a first step towards characterising the stream fauna.

Alan Yen is surveying Victorian soil and litter fauna with an emphasis on the effects of management practices upon them. At present he is looking at the effect of forestry operations on the cool temperate rainforests of the Errinundra Plateau in far East Gippsland, and the effects of control burning on the Reefton catchment near Melbourne. Alan is also continuing his survey of the ground dwelling beetles of the Big Desert, and his work on the taxonomy of non-eucalypt feeding psyllids.

John and Alan recently presented a paper and poster respectively at a "Workshop on Survey Methods for Nature Conservation" in Adelaide. Their next planned field trip is one of a series to the Errinundra Plateau, where both have current research projects on small mountain catchments.

La Trobe University, Zoology Department

Ian Thornton attended the Krakatoa Centenary Symposium organised by the Indonesian Academy of Sciences in Jakarta from 23-27 August, and the symposium 'Krakatoa - 100 years on' of the British Ecological Society at the British Museum (Natural History) in London on 21 September. He presented papers on 'A preliminary survey of the psocopteran fauna of the Krakatoan islands' (Jakarta) and 'Krakatoa - the development of a fauna' (London). He also spent 6 days on the Krakatoa group collectiong insects, and made some preliminary arrangements for a La Trobe University, Department of Zoology Krakatoa Expedition in 1984.

Tim New is spending 2-3 weeks in Hawaii from mid-October, mainly to examine Papua New Guinea Neuroptera in the Bishop Museum, but also to try to find larvae of some of the endemic lacewing genera. He recently gave a paper on 'Wasps, weevils and wattles' at a workshop on 'Reproductive Biology of Acacias' at Melbourne University.

Wije Danthanarayana ('Dan') has been invited to participate in a symposium 'Migration : mechanisms and adaptive significance', to celebrate the centenary of the University of Texas at Austin, from October 29 to November 4. He will read a paper entitled 'An adaptive mechanism for migration in night-flying insects, involving lunar periodicity and polarised moonlight'.

CSIRO Division of Chemical and Wood Technology

Dr Stuart Gage, from Michigan State University, recently accompanied John French on a tour of termite sites in the Boola Boola State Forest. Don Ewart (La Trobe) is currently studying the ecology of termites in this area.

Plant Research Institute, Burnley

Stuart Gage from Michigan State University, USA, has recently joined the staff at the Plant Research Institute as Visiting Scientist for 1983/84. Professor Gage's specialized areas of interest are in the fields of applied ecology, remote sensing of pest damage, effects of climatic conditions on pest numbers, and the modelling of pest population dynamics. Prof. Gage will have a major input into the Department's pest management programmes. In particular in the pest management system currently being completed for pome fruits.

Following the 4th International Congress of Plant Pathology held in August in Melbourne, an associated Workshop on Plant virus Epidemiology was held in Corowa, NSW. Peter Ridland, John Osmelak and Gordon Berg attended this and found it most valuable, not only in its content, but also as it enabled them to meet a number of overseas virologists and entomologists who had stayed on after the Congress. Dr Mike Irwin (University of Illinois), Dr W.F. Tjallingii (Agricultural University, Wageningen) and many plant pathologists visited the Plant Research Institute during this time. Dr Irwin then embarked on a round Australia collecting trip with Dr Evert Schlinger (U.C. Berkeley) who had flown out to join him.

A most successful workshop on field crop entomology was held at Longerenong Agricultural College in late August organized by Garry McDonald, Mark Smith and Peter Ridland. A total of 17 delegates attended including representatives from the CSIRO, Division of Entomology, Canberra, and the NSW, SA, Tasmanian and Victorian Departments of Agriculture. The formal papers presented covered both current and proposed research and were followed by fruitful discussions on such topics as dissemination of research results, cooperative research and the prospects for plant breeding in Integrated Pest Management.

John Osmelak, Mark Perry, Helen Rosenbaum and Graeme Murphy attended a mini symposium held by the Royal Society in Melbourne in September and presented papers or posters on control of tomato big bud, phenological simulation, grain insect control and black field cricket baiting, respectively.

Ian McLaren retired recently due to ill health. We wish him the best for the future and hope his health will improve.

Ian Barrass has now completed his period of training at P.R.I. and is now located at the Irrigation Research Insitutte, Tatura where he will be working on IPM in various cropping systems.

Peter Williams attended the Stored Grain Protection Conference organized by the Australian Bulk Grain Handling Authorities in Melbourne on September 12-13th. It was followed on the 14th by a field trip to the Grain Elevators Board terminal at Dunolly where the CSIRO heat disinfestation unit and a new controlled atmosphere generator were inspected.

Terry Amos visited Peter Bailey at Northfield in September to discuss biological control work.

Peter Allen from Northfield visited the P.R.I. in September and discussed stored products and pasture entomology work with

Peter Williams, Gordon Berg and Peter Ridland.

Tim New & Gordon Berg
Regional Councillors

SOUTH AUSTRALIA

Waite Institute, Entomology Department

It's been a time of comings and goings in the Department over the last few months. Peter Miles recently attended the International Conference on Integrated Plant Protection in Budapest, Hungary, where he was an invited speaker during the session on Industrial Crops and Chairperson of the Papilonaceous Crops session. He was also the guest speaker at the Annual General Meeting of the SA Branch of the Australian Institute of Science Technology. The title of his address was - 'Recent Developments in the Technology of Plant Protection'.

Dudley Pinnock has just returned from Tasmania where he was involved in examining the problems they are having with pasture scarabs. In collaboration with Peter McQuillan and Aleks Terauds (both of Tasmanian Department of Agriculture) Dudley hopes to identify and recommend suitable microbial control options. Both Dudley and Dave Cooper will be attending the National Symposium on Sheep Blowfly and Flystrike at the University of NSW in December. They will be presenting recent results concerning microbial control of sheep blowfly.

Ms Dhamayanti Adidharma, a postgraduate student, has just returned from 2 months field work in Indonesia. Whilst there 'Yanti' continued with her population censusing of mites on cassava.

Both Duncan Mackay (CSIRO Postdoc.) and Paul Bailey (P.G. student) attended the recent 18th International Ethology Conference in Brisbane. Paul presented a poster in relation to his work on optimal foraging of ambush predators.

It was sad to farwell 3 colleagues in the Department. Peter Samson, after a 2 year postdoctoral fellowship, has returned to Queensland to take up an appointment with the Entomology Branch, DPI. Peter's work will be primarily investigating resistance of stored product pests although we understand a few overseas trips are involved. Dr Toshiya Ikeda and his family left in October to return to Japan after 12 months' study leave, working with Dave Morgan and Janet Farr on *Ips* pheromone biochemistry and analysis of fatty acids in leaf tissue. Professor R.J. (Dick) Brand, Associate Professor of Biostatics at the University of California, Berkeley has returned to the US after taking a significant part in teaching the Masters Course in Pest Management.

Dr D.B. Smith, Agricultural Engineer, USDA Bioengineering Research Unit, University of Missouri, Columbia has arrived to take on teaching responsibilities for the Masters course in Pest Management. He will be staying for a couple of months. Professor Alan Berryman arrives in mid-October on special study leave for 5 months. Whilst here Prof. Berryman will be undertaking both research and teaching programmes.

Mr Simon Lawson and Mrs Jane Bartlett have recently enrolled as p/t Masters students to work with Dave Morgan on possible biological controls of *Ips grandicollis*. Simon will be investigating predators while Jane is examining parasitoids.

Recent short term visitors to the Department have been Dr Arthur Tetnakaran of the Canadian Forest Service who is presently working at the CSIRO Canberra. Reg Roberts and Roger Farrow, also of CSIRO Canberra, visited Dave Morgan and Janet Farr to discuss aspects of eucalypt dieback. Ross Wylie (QLD Forestry Department) and Bob Eldridge (NSW Forestry Deparment) came to view the current programme on *Ips* biological control and had discusison with Dave Morgan.

Richard Milner (Entomol. CSIRO Canberra) visited the Insect Pathology Group and met both Dave Cooper and Dudley Pinnock. Talking of the Insect Pathology Group the new wing of their building has been finished and Dave Cooper and Robin Coles have moved into somewhat more spacious accommodation. In addition, to help fill up all that space, three new technical assistants are starting, they are Jenny Birve, Nancy Telford and Lynette Tilly.

South Australian Museum

Over the long weekend in South Australia a water main burst on the floor above the Entomological Collections which are housed in a privately owned block of offices in Adelaide, flooding the collection and library. Although cleaning up was rapid after the flood was discovered, much of the dry collection was affected but probably not permanently. On the other hand some of the slide material has unfortunatley been lost. A considerable amount of artwork and some books have also been damaged. This catastrophe points out the necessity of having museum collections housed properly in building designed for the purpose and under constant surveillance.

Penny Greenslade returned in August from nine months in France and England via Puerto Rico where she completed collaborative work on Australian Australotomurus (Collembola).

Jonathon Majer from WAIT, Perth, visited the Museum in September and gave a seminar on Insects and the Mining Industry. It was followed by drinks and dinner for members of the Entomological Society in SA.

Other visitors were Alan Yen to talk to David Lee and Penny Greenslade on leaf litter invertebrates. Alan was attending a meeting in Adelaide on Survey Methods for Nature Conservation which Penny Greenslade also attended.

Dr Michael Irwin and Dr Evert Schlinger of the University of California, Berkley, also called in early September briefly to collect information for the new proposed catalogue of Australasian Diptera.

Murray Wallace and Eric Holm (CSIRO Entomology, Canberra) were also in the State in connection with their dung beetle work.

Professor Ray Specht of Queensland University visited in August to discuss the invertebrate section for his proposed Mediterranean Ecosystems data source book with Ron Fisher and Penny and John Greenslade.

Adelaide University

Graham Browning is back in Western Australia searching for further Myrmecia.

Department of Agriculture

Don Swincer returned to Adelaide in late July after having successfully completed his Ph.D. at Davis, University of California.

Mr John Kraft, Plant Pathologist, USDA, visited Northfield on 26 and 27 August and presented a seminar entitled "Grain Legume Disease Research".

Dr Arthur Retnakaran, a visiting scientist from the Forest Pest Management Institute, Sault Ste Marie, Canada and working at the CSIRO, Division of Entomology, visited the Northfield Research Laboratories on 31 August to discuss principles of pest management.

Greg Baker, Peter Bailey, Paul Madge and Dennis Hopkins attended a workshop on field crop entomology at Horsham on August 29-31.

Peter Allen attended the Stored Grain Protection Conference held in Melbourne from 12-14 September. The Conference was sponsored by the Australian Grain Handling Authorities. Peter also spent a day with the Stored Products and Pasture Pest Research Groups at the Victorian Plant Research Institute, Burnley.

Terry Amos (VPRI, Burnley) visited Northfield in mid-September and spent two days with Peter Bailey finalising a report on their recent trip to China.

Reg Roberts and Roger Farrow (CSIRO, Canberra) visited Northfield on 29 September.

Richard Milner (CSIRO, Canberra) visited Northfield on 12 October to discuss with Peter Bailey a project on the use of pathogens to control pests of glasshouse crops.

CSIRO Soils Division

John Greenslade was in England in July and August at Sheffield University working with Professor Grime on a review of ecological strategies. A week after his return to Adelaide he left for three weeks field work in the Northern Territory surveying ants at Kakadu and Jabiru as well as attending the International Ethology Meeting in Brisbane where he gave a paper on ant behaviour.

Penny Greenslade
Regional Councillor

WESTERN AUSTRALIA

Visitors to Perth

Dr Bill Reed from the International Crop Research Institute for Semiarid Tropics in Hyderabad, India, spent a couple of days in September with entomologists at the Department of Agriculture discussing *Heliothis* ecology and control. Also in September, Dr Michael Irwin of the University of Illinois and Dr Evert Schlinger of the University of California paid brief visits to the Department of Agriculture and the W.A. Museum before continuing on an extensive motoring tour of Australia. Amongst other things, Michael's interests include soybean insects and therevid flies while Evert's include acrocerid flies and the coevolution of spiders and their parasitoids.

WA Institute of Technology

Jonathon Majer recently attended the 1983 Australian Mining Industry Council environmental workshop in the Hunter Valley where he presented a paper entitled "Assessing and promoting invertebrate return in rehabilitated mine sites". On his way over, he visited John and Penny Greenslade in Adelaide to discuss related studies on Queensland ants and on springtail colonisation of mine sites.

WA Museum

In late July and early August, Terry Houston and Peter McMillan ventured into the Gibson and Great Sandy Deserts of WA to collect insects generally following reports of a good season there. The trip proved to be very profitable especially in respect of native bees and several of the species collected were not known previously.

Terry Houston
Regional Councillor

QUEENSLAND

Passing through Brisbane

George Bornemissza who has recently retired from CSIRO, Division of Entomology, Hobart, passed through Brisbane in September. During his short stay George visited the Queensland Museum and the University of Queensland and had discussions with Joe Sedlacek. The visit was prompted by George's interest in extreme polymorphism in large Coleoptera.

Bob Taylor and Roger Bartell were in Brisbane during late August and early September to attend the 18th International Ethological Conference at the University of Queensland.

Dr George Gibb, of Victoria University at Wellington NZ, passed through Brisbane in November enroute to collecting visits to Lord Howe Island and North Queensland in search of micropterygid moths and their larvae.

Dr Ebbe Schmidt Nielsen, Curator of Lepidoptera at ANIC Canberra and Dr Marianne Horak also of the ANIC accompanied Ian Common when he visited the insect collections of DPI, University of Queensland and the Queensland Museum on the 8th August. Later in the week, Ebbe addressed a meeting of Brisbane taxonomists on recent studies in the systematics of primitive Lepidoptera.

In early October, Gunther Theischinger, a resident of Sydney and an authority on aquatic insects, visited the Queensland Museum and the University of Queensland to examine their collections of stone flies and dragonflies. Gunther followed this visit with two weeks collecting in south Queensland as for north as Kroombit Tops near Gladstone.

Department of Primary Industries

Dr Peter Samson has recently joined DPI staff to participate in an ACIAR project investigating the integrated use of pesticides in grain storage in the humid tropics. On the 11 October, Peter and Merv Bengston left for a 10 day tour of Malaysia and the Philippines in connection with this project.

John Donaldson spent 3 weeks in Torres Strait and North Queensland surveying for *Eumetopina flavipes* Muir, a delphacid pest of sugar cane only recently recorded from Australia. John reports that much of the land was very dry and undergoing its annual burnoff.

Dr Michael Irwin, a soybean entomologist with the University of Illinois paid an unexpected visit to the Indooroopilly Laboratories. Mike is well known for his work on therevids (Diptera) and is involved in the compilation of an Australian catalogue for this family. He is currently on an extensive collecting trip taking in most parts of Australia.

An interest in fresh fruit disinfestation led Neil Heather to Sydney in early October to attend a symposium on the irradiation of food.

Our roving quarantine entomologist John Turner has just returned from another trip to northern Cape York and Torres Strait. John's sojourn was connected with the fruit fly monitoring campaign and a survey of insects of economic plants in the region.

University of Queensland

Ken Walker of the Museum of Victoria (formerly the National Museum of Victoria) visited in mid September to borrow specimens of halictid bees which he studied for his M.Sc.

Doug Kettle returned to Brisbane in mid October after a month in England where he discussed publication of his book on medical and veterinary entomology.

September was an exciting month for Martin Rice's insect physiology group with visits from Robin Newson of ICIPE, (Kenya), Roger Wilson of Wellcome (UK), Freddie Tjauling of Wageningen (Holland), Ian Dadour of the University of West Australia, and Lindsay Barton Browne of CSIRO, Canberra.

University blowfly physiologists have contributed to entomological P.R. by producing films with DPI, the ABC and a visiting BBC's "Tomorrow's World" production team.

Congratulations to John Mann who has been awarded an Honorary Doctorate of Agricultural Science for achievements in the field of biological control of pests and weeds and in recognition of the links he forged between the Alan Fletcher Research Station and the University Department of Entomology.

Congratulations are also due to Ian Bock of La Trobe University on receiving his D.Sc. from the University of Queensland for his studies of Drosophilidae.

Queensland Museum

Geoff Monteith and David Yeates spent a week in Canberra in mid September working with CSIRO taxonomists for the identification of Coleoptera and other insects collected during the Earthwatch expedition to Bellenden-Ker. Approximately 1500 species of beetles have now been recognized from the five collecting stations on Bellenden-Ker. Geoff and David together with Geoff Thompson will be heading north again in late October to scale the high mountains around Tully and Mossman in search of further weird and wonderful insects.

Dr Bob Matthews of the University of Georgia and Mrs Jan Brockmann of the University of Florida had discussions with Ted Dahms in early September. They were especially interested in Ted's work on *Melittobia*, a eulophid parasite of mud wasps.

An exciting find were two living "Cooloola Monsters" (*Cooloola propator*) collected by BSES entomologist Dick Bull, near Bundaberg. Dug from a recently harvested sugar cane paddock during sampling after insecticide trials, the record extends the animal's known range considerably further north.

Alan Fletcher Research Station

Rachel McFadyen will be presenting a paper on new approaches in the biological control of weeds at the 9th Asian Pacific Weed Science Society Conference in Manila.

Forestry Department

The West Indian drywood termite, *Cryptotermes brevis*, continues to make its presence felt and Brenton Peters reports the fumigation of further houses in Brisbane city and suburbs and at Tewantin.

Ross Wylie attended a seminar on agriculture and conservation in inland Queensland, organised by the Wild Life Preservation Society and held in Dalby from 25-26 September.

CSIRO Long Pocket Laboratories

Members of the Society were shocked to hear of the tragic death of Dr R.H. (Harry) Wharton who was killed in a tractor accident on his property at Billinudgel, northern New South Wales on Sunday 18th September. One of the true gentlemen of Australian Entomology, Harry will be sorely missed by his family and colleagues. An obituary appears elsewhere in this News Bulletin.

Dr Carina Cilliers of the South African Plant Protection Institute and Dr Dennis Proctor of Botswana recently visited the Long Pocket Laboratories. They were especially interested in the work being carried out for the biological control of Salvinia.

Other international visitors were Dr Robin Newson from ICIPE in Kenya and Dr Bob McFarlane from the Department of Agriculture in the Solomon Islands.

George Rothschild and Murray Upton briefly escaped from the Canberra winter with short visits to Brisbane during August.

Queensland Institute of Medical Research

Brian Kay presented a paper on the 1981-83 dengue outbreak in north and central Queensland at the International Conference on dengue/dengue haemorrhagic fever held in Kuala Lumpur from September 1-3. While he was in Malaysia, he visited several laboratories and the national vector-borne diseases division.

Mosquito researcher Stan Christian returned to Minj in Papua New Guinea on 15th September. Stan had been in Brisbane recovering from an illness.

Griffith University

Lincoln Brower and Jan Brockman of the University of Florida who were in Brisbane for the 18th International Ethological Conference visited Griffith University during September. Lincoln and Jane were especially interested in the butterfly work being carried out at the School of Environmental Studies. During the visit Lincoln delivered a fascinating talk on the overwintering of monarch butterflies in Mexico.

Ian Galloway
Regional Councillor

NORTH QUEENSLAND

Don Smith from Biotech in Sydney spent a week in Mareeba working with Robin Bedding of Hobart in studies on the use of Nematodes as biocontrol agents against a variety of insect pests, including Heliothis, Cosmopolites and Tryporyza.

John Barrett from DPI Indooroopilly spent a week in the Mareeba area, making trips to the Morehead River and Minamoolka Station with regard to work he did on termites when based in Atherton.

Russel Wicks from Emerald paid a brief visit to Mareeba to examine the new Entomology labs, as did Dick Lloyd of Toowoomba. In addition, Dick accompanied Ian Titmarsh on a short collecting trip in the Laura-Cooktown area.

Marina Tyndale-Biscoe spent time at the James Cook University in Townsville in connection with her Ph.D. project being done on dung beetle biology under Rhondda Jones.

Marina and Rhondda also found time to visit Cairns and the Tableland talking with other entomologists and sampling pierids.

Roger Goebel from Brisbane spent several days in north Queensland in August visiting various bee keepers in the area.

Professor R. Kisimoto from Mie University in Japan visited Ayr in north Queensland recently. He is studying migration in Nilaparvata lugens, which is an important rice pest in north Queensland.

Ross Storey and Alan Walford-Huggins pursued beetles in the Burketown and Lawn Hill areas of the gulf country in September, getting little big enough to put a pin through.

George Bornemissza visited the north in early September alternating between Yorkey's Knob beach and various rainforest tracks on the Tableland. He also visited local beetle collectors and examined their collections.

Phil Kirsch who is doing some entomological consulting in Ayr visited Mareeba and talked with local people on the Tableland pest situation.

John Turner spent two weeks in Cape York Peninsula in late September. He was driving from Cairns through to Kowanyama and Edward River - visiting co-operators in the fruit fly monitoring programme.

John Polhemus, of Colorado, USA, spent a fortnight in September, collecting aquatic bugs, especially Saldidae, from Townsville north to Cape York Peninsula before visiting Thursday Island on his way to Papua New Guinea and New Caledonia.

Garry Sankowsky drove to Iron Range in September, hoping to join up with Graham Wood who has been there for the last few months after butterflies.

Tom Passlow visited Mareeba and Ayr in the first week of October for consultations with local DPI entomologists and to attend growers meetings. After he returns to

Brisbane, Ian Kay, Ian Titmatsh and Ian Cunningham will be flying to Kununurra in WA for the Third Conference of Tropical Entomology.

Mr Russell Boch of the Animal Quarantine Branch of the DPI in Cairns will spend the coming year at James Cook University doing a Masters degree. He will be looking at the viriology aspects of some arboviruses in mosquitoes. He was previously involved with screw worm monitoring in Cape York Peninsula.

David Knowles and Stephen Crane of Brisbane, and Mark Golding of Western Australia passed through Julatten together in October. They were on their way to the Cooktown area in search of buprestids and other things.

Ross Storey
Regional Councillor

NORTHERN TERRITORY

D.P.P., Weeds Sectn.

Ken Harley (CSIRO, Indooroopilly) visited 24 July - 2 August to monitor mimosa sites in current biocontrol programmes. A mass release of mimosa seed-eating bruchids, *Acanthoscelides* spp., was made. Don Sands, also of CSIRO, Indooroopilly, visited 21-28 July to collect pupae of the salvinia weevil, *Cyrtobagous* sp., from a liberation site close to Darwin. Biocontrol of salvinia by this weevil is promising, with extensive damage evident at the Howard River and on the Nhulunbuy lagoon. Dr Joe Balciunas from the Aquatic Plant Manangement Laboratory in Florida visited from 8 to 19 August. Joe was searching for potential biocontrol agents of *Hydrilla verticillata*, an aquatic plant commonly found in the Top End.

Health Department, Medical Entomology Sectn.

Geoff Davis and Wendy Kelton have been working in a joint effort with the Darwin City Council to locate and ensure control of large hatches of the salt marsh mosquito, *Aedes vigilax*, that breed adjacent to the suburbs of Darwin. Geoff is also conducting investigations into the use of *Bacillus thuringiensis israelensis* under local conditions for control of a range of mosquito species. Problems of cockroach and ant (Pharoah's ant) control are being investigated in public buildings and we would appreciate hearing any success formulas that have worked for these insects in other areas. Peter Whelan is continuing liaison to ensure the implementation of major engineering measures for the elimination of mosquito breeding grounds around Darwin. October saw the first sods turned for the draining of Leanyer swamp, which has been the greatest mosquito source for Darwin's suburbs. Peter Leihne will continue his biting midge investigations at Palmerston for a further 12 months starting in January 1984, after a break in Perth and a visit to Queensland, where he hopes to make contact with people involved in control and prevention of *Culicoides ornatus* pest problems.

Northern Territory Museum

The first ever Open Day of the Museum was held on 17 September 1983. Activities in the entomology department included a small display of some local live insects and spiders, a photographic display of the Northern Territory insect life and a demonstration of some insect collecting techniques. Pate des Abeilles, prepared from bee larvae (recipe from Tom McRae, University of Queensland), was served on biscuits to the liking of many visitors.

D.P.P., Entomology Section

Alan Allwood, Ian Cook and Colin Wilson along with Ted Fenner (Agric. Quarantine Section) visited Kununurra for a week in October to participate in the 3rd Workshop on Tropical Agricultural Entomology. Ian Titmarsh (DPI, Mareeba) visited the section for about a week to gain a general view of NT agricultural entomology, and to have discussions relating to *Heliothis*.

M.B. Malipatil
Regional Councillor

NEW SOUTH WALES

Biological and Chemical Res. Inst., Rydalmere

Walter Dauterman and his family have returned to North Carolina after 12 months in Australia where Walter was working with Paul Hughes on Insecticide Resistance.

Paul Hughes attended the 10th Conference of the World Association for the Advancement of Veterinary Parasitology in Perth during August. Paul spoke on the impact of insecticide resistance on integrated control of the sheep blowfly.

Dr R.M. Siddiqui, Principal Nematologist at the Commonwealth Institute of Parasitology, St Albans, England, visited Eberhard Schicha on 14 September to discuss identification services.

Sara Hunter joined the Taxonomy Section on 18 July as our new assistant. Sara's parents are well known in biological circles for their family museum which includes extensive collections of marine shells and Lepidoptera.

Moreno Julli, formerly with Pan Continental in the Northern Territory, has joined Taxonomy Section working with Eberhard Schicha on predacious mites and scale insects.

Gary Fitt has left us to join the CSIRO Cotton Research Unit at Narrabri.

Australian Museum

Larry Watrous from the Field Museum of Natural History in Chicago spent 3½ months working on the Australian Museum's collection of Staphylinidae. While here, Larry accompanied Geoff Holloway on a two month long trip collecting insects in the mountain ranges of Central Australia. The trip which included ranges in South Australia, Western Australia and the Northern Territory was supported by a grant from the National Geographical Society.

Geoff also spent a month and a half in Western New South Wales with Henry and Anne Howden looking for Geotrupids.

CSIRO, Warrawee

Alan Bateman was in New Guinea from July to early October working with Phil Spradbury on the Screw worm fly project.

Brian Fletcher will be leaving for the Mediterranean in November to spend a month with researchers at ENEAC in Italy, working on population biology and population models of fruit flies.

University of Sydney

David Sinclair, formerly at the University of Queensland, has commenced a Ph.D. project with Fred McDonald on the Taxonomy and Biology of Tessaratomidae (Hemiptera).

Murray Fletcher
Regional Councillor

NEW SOUTH WALES COUNTRY NEWS

Gary Fitt has recently taken up an appointment as entomologist with the CSIRO Division of Plant Industry as a member of the SIRATAC team at the Narrabri Agricultural Research Station. It is expected that Gary will work on some aspect of the biology of *Heliothis*.

Angus Wilson, a CSIRO staff member at Narrabri will shortly leave Australia to attend the International Congress of Plant Protection in Brighton, U.K., in November.

Dr Penny Ives, late of CSIRO at Narrabri, has recently taken up a position as research/extension entomologist in Minnesota, USA.

Christine Stone and Robin Gunning, NSW Department of Agriculture entomologists at Yanco Agricultural Research Institute, attended a very valuable interstate workshop on Field Crop Entomology at Horsham, Victoria, in August.

Dr David Evans, a lepidopteran specialist from ICI in U.K., visited Robin Gunning in late July to discuss synthetic pyrethroid resistance in *Heliothis armiger*.

Robin Gunning
Regional Councillor

TASMANIA

Tasmanian Museum and Art Gallery

Alison Green, Curator of Invertebrates, has recently returned from extended leave in the U.K., during which time she attended the International Symposium on the Biology of Terrestrial Isopods in London on 7-8 July, 1983. Alison also had the opportunity to inspect types of Australian Isopoda at the BM(NH) and discuss curatorial matters there and at the Royal Scottish Museum.

Forestry Commission

Bob Mesibov enjoyed several months in Chile studying the biota of a range of temperate rainforests and searching for myriapods. While the similarities with the Tasmanian *Nothofagus* forests were striking, Bob was disappointed to note that myriapods are quite rare in Chilean forests. He was particularly impressed with the high level of awareness of the flora and fauna amongst the public at all levels, which was reflected in abundant, high quality field guides, and high use levels of well-staffed National Parks.

Department of Agriculture

Dr Mike Irwin of the University of Illinois spent 2 weeks with Gradon Johnstone in late October investigating native *Glycine* species as part of a survey of viruses and aphids associated with relatives of soybean. (Australia is the centre of diversity of *Glycine*). In addition, they plan to study some aspects of the attraction of alate aphids to their host plants. Mike also found time to pursue his interest in the taxonomy of therevid flies.

Ken Fairey (Forestry Commission, NSW) visited the Department and the Forestry Commission while on a state-wide search for larvae of the pasture moth *Pterolocera* spp.

Peter McQuillan
Regional Councillor

OVERSEAS NEWS

NEW ZEALAND

The Australia/New Zealand "Closer Economic Relationships" agreement should never have included *Latrodectus hasselti* and *Araneus heroine*!

The Red Back Spider (*Latrodectus hasselti*) has been finding its way to NZ with increasing frequency. In the last year or so, 3 fully grown females have been found in different locations in Otago and it is now considered that one or more colonies have become established (The Weta, 5(2) 1982). *Araneus heroine* has been recorded from a garden in Hamilton. It is not known whether this spider has become established in NZ (The Weta, 5(1) 1982). *Ixodes holocyclus*, the paralysis tick, has been intercepted on several occasions and it is considered that it could become established using the introduced Brush-tailed Possum (*Trichosurus vulpecula*) as a host.

A list of current entomological research projects being undertaken by postgraduate students in New Zealand tertiary institutions is published in the latest issue of "The Weta" (copy available from G.B. Monteith).

Australia entomologists visiting NZ are cordially invited to contact their NZ colleagues. Addresses of branch Secretaries or individual members of the Entomological Society of New Zealand are available from me at my address on the back cover.

John Tenquist
New Zealand Correspondent

PAPUA NEW GUINEA

Recent visitors to DPI have included Dr John Polhemus and his son Dan from Colorado, USA, who have been collecting saldids and other aquatic Hemiptera as part of their study of the systematics and zoogeography of these groups in PNG. Presently in the country is Prof. Philip Entwistle from the Unit of Invertebrate Virology at Oxford. Prof. Entwistle is supported by the E.E.C. Consultancy Fund and is investigating the control of an outbreak of lymantriid moths on pines at Goroka (Eastern Highlands Province) for the Office of Forests. Other news from DPI is the recent publication of their recommendations for control of insect pests in PNG - a useful document edited by Brian Thistleton.

The CSIRO Screw Worm Fly Unit has recently had an influx of visitors which included the Federal Minister for Primary Industry, John Kerin, DPI ministers from the various Australian States, the Director of the Bureau of Animal Health and the Chief of CSIRO Division of Entomology, Max Whitten. All of these people were attending the Agricultural Council Meeting which was held in Port Moresby this year. Phil Spradbery also reports that a decision has been made to continue the work on the Screw Worm Fly Unit at Kila Kila.

Elaine Brough has completed two trips to survey the insect pests of citrus in PNG. Areas covered included Mendi, Kagua, Erave and Tari (Southern Highlands Province), Aropa, Kieta, Panguna and Kurwina (North Solomons Province), Kavieng, Mangai and the Lelet Plateau (New Ireland Province).

Elaine Brough
Papua New Guinea Correspondent

NEWS FROM AFFILIATED SOCIETIES

ENTOMOLOGICAL SOCIETY OF NEW SOUTH WALES

There have been two meetings since the last News Bulletin.

In August, Dr D.S. "Woody" Horning gave a talk on the Macleay collections. After an outline of the history of the collection, which made it clear that it is one of the most important, historically, in Australia, he went on to discuss present activities and curation and ended by expressing the hope that the future of the collections will be secure.

In September we brought together a group of research workers - one from each of the universities in Sydney. Jenny Anderson, from the University of New South Wales, talked about interesting parasites of adult ladybirds. Dinah Hales, from Macquarie University, talked about aphid "soldiers" - members of the colony whose business in life is to do something about defending the colony and David Sinclair, now at the University of Sydney, talked about his work on the behaviour of leaf-curling spiders.

In December we go all social and have a dinner - not that we aren't social at other times as well!

Meetings are on the first Wednesday of the month; visitors and potential members are always welcome, at 7.30 in the evening at the Australian Museum.

Courtenay Smithers
Representative Councillor

ROY. ZOOL. SOC. OF N.S.W. ENTOMOLOGY SECTION

At the June meeting Roger de Keyser reported on the work that he had done on insects in the Philippines on several collecting visits to the area. Although special attention was devoted to Coleoptera, many very striking specimens of this and other orders were exhibited.

Bert Brunet addressed the August meeting his topic being "A Viewpoint on Sharing a Love of Insects, via Photography, Drawing and Writing". The subject was dealt with in a comprehensive and interesting way. The officers elected for 1983-84 are as follows:

Chairman - Clarry Chadwick
Hon. Secretary - Rudy Mulder
Hon. Treasurer - Jack Wilson
Councillor - Bert Brunet

In October Rudy Mulder gave a talk on the insects, particularly Coleoptera, found in association with the grass tree (Xanthorrhoea sp.) around Sydney. Colour slides of insects and invertebrates were also included. Bert Brunet exhibited colour slides illustrating various facets of insect biology.

Clarry Chadwick
Representative Councillor

ENTOMOLOGICAL SOCIETY OF QUEENSLAND

It was with sorrow and a great sense of loss that members of the Society heard of the tragic death of former president, Dr R.H. (Harry) Wharton in September. Sadly, September also brought the sudden death of our long serving and generous Honorary Auditor, Mr Keith Cantrell, father of DPI Entomologist, Bryan Cantrell.

As 1983 draws to an end it is appropriate to report on the Society's activities during the year. Rob Sutherst of the CSIRO Long Pocket Laboratories has served as President. Meetings have been held at the University of Queensland on the second Monday of each month from March to November with the exception of July when, as is customary, no meeting was held. Average attendance at these meetings was 31, excluding the August meeting which was the Perkins Memorial Lecture at which 72 members and visitors were present.

Our programme has been varied and interesting with speakers and address titles as follows:

March - Annual General Meeting. Presidential address of Don Sands : "Trends in Research on the Biological Control of Weeds".

April - Dr D. Wilson : "Veterinary Entomology in the USDA".

May - Mr P. Twine : "SIRATAC - An Approach to Pest Management in Cotton".

June - A notes and exhibits evening with seven items from members.

August - Dr I.F.B. Common : "Adaptation and Diversity in Australian Microlepidoptera".

September - Mr Tom Passlow : "DPI Entomology Branch - Future Directions and Policy".

October - Dr Naomi Pierce : "Symbiosis between Lycaenid Butterfly Larvae and Plants".

November - Dr Susan Niven : "The Precise Environment of the Yellow-Fever Mosquito, *Aedes aegypti*".

The final meeting for the year will be a combined barbeque and notes and exhibits evening at CSIRO Long Pocket on 12th December.

Margaret Schneider
Representative Councillor

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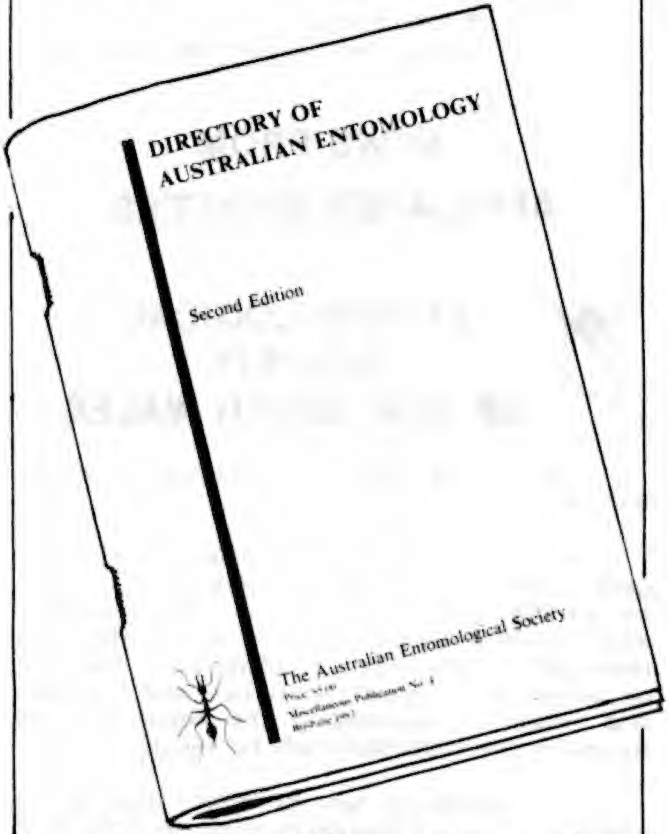

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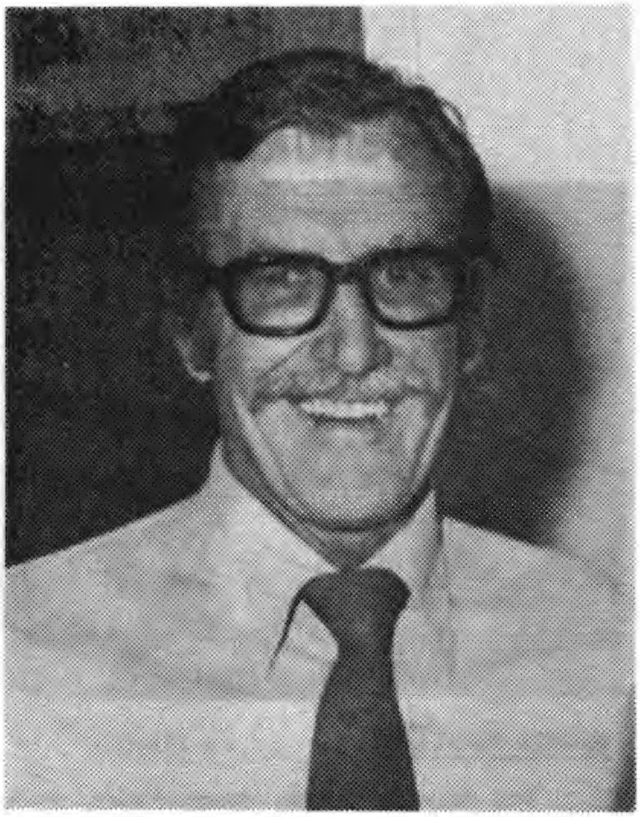

RONALD HARRY WHARTON (April 14, 1923 - September 18, 1983).

A warm, dynamic person and peerless citizen was lost to us on 18 September, 1983, when Harry Wharton was killed in an accident with a tractor on his farm at Billinudgel, near Brunswick Heads in New South Wales. His passing is keenly felt by his innumerable friends, and by the world fraternity of scholars in medical and veterinary entomology.

Harry Wharton was born in Armidale, New South Wales, on 14 April, 1923. He was educated at Lismore High School and the New England College of Sydney University, as it then was, receiving the degree of Bachelor of Science with First Class Honours in Entomology in 1944. Through 1944-45 Harry served in Malaria Control Units in the Royal Australian Air Force, his duties taking him to Milne Bay (Papua New Guinea), Darwin (Northern Territory) and Morotai (Moluccas). On demobilisation he accepted the position of Teaching Fellow in Zoology at Sydney University, which he held from January 1946 to May 1948.

From 1948 to 1963, Harry was employed by the Institute for Medical Research at Kuala Lumpur in Malaya. During this appointment he gained a Master of Science degree at the University of Sydney for studies on the use of residual insecticides (1958), and the degree of Doctor of Philosophy at the University of Malaya, for a thesis on *Mansonia* mosquitoes in relation to filariasis (1958). His term in Malaya, which included a considerable period at a field station at Kuantan on the east coast, saw him achieve world standing in the study of malaria and filariasis, and, for his work in the latter field he was awarded the Chalmers Medal by the Royal Society of Tropical Medicine and Hygiene (1967). It was a productive and very busy period indeed, and yet he managed to find the extra energy at one period to shoulder a rifle and join a unit engaged in the hazardous business of stalking Chinese Communist guerillas through the jungles at night, a venture which was soon terminated by official interdiction, in view of his importance to the country in relation to medical matters.

On a visit to Australia in June 1953, Harry was married to Helen Pulling, who was to be an admirable companion and support to him throughout his life. Their two children, Robin and Geoffrey, were born during their stay in Malaya.

A new phase in Harry's life began in 1963, when he was appointed to the CSIRO Division of Entomology to lead the cattle tick research team, then stationed at Yeerongpilly, Queensland. The investigations concerned principally tick resistance in cattle, acaricide resistance in ticks, and tick ecology and physiology. Much time and energy had to be devoted to the acquisition of factilities, and land for maintaining experimental cattle, and, throughout 1967-68, to the supervision of the building of the team's new accommodation across the Brisbane River at Long Pocket. The research unit that was built up was without parallel in the world of veterinary entomology.

Harry spent 15 years leading the cattle tick team, and supervising the other entomological projects based on the Long Pocket Laboratories. The output of research on cattle tick was tremendous in volume, and opened up many new trends in thinking, but the period witnessed the development of diverse strains of ticks, with complex cross-resistances to acaricides, and it became a daunting matter to forecast the possible period or usefulness of new toxicants.

Although lending full support to those studying this problem, Harry accepted the possibility that it might ultimately prove to be insuperable, and therefore devoted much attention to the development of tick resistance in cattle. His vigorous advocacy of the use of resistant animals met with a considerable degree of success, and came to exert a strong influence on trends in the cattle industry.

In 1978, Harry, feeling the need of a new challenge, and expressing an intense desire he had long nurtured to help extend aid to the developing nations of south-east Asia, accepted the position of Officer-in-Charge of the CSIRO/ADAB Centre for Animal Research and Development (P3T) at Bogor, Indonesia. The purpose of this Centre is to build up an Indonesian-staffed research unit to work for the up-grading of the endemic livestock industries. It was a challenging position, which Harry filled with characteristic competence, exhibiting sangfroid in the face of politcal chicanery, and abiding cheerfulness in dealing with never-ending problems of human relationships and logistics of supply.

On his return to Australia, Harry was again stationed at the Long Pocket Laboratories, but as a member of the new Division of Tropical Animal Science. Much of the time between his return in 1981 and his untimely death was occupied in preparing an over-view of non-chemical methods of controlling pests of domestic animals.

Harry was a born leader. He was fearless in discussion, and if good sense or matters of principle appeared to be in jeopardy, he could be as fiery as some of the Asian curries he so relished. However, this did not lower the esteem in which he was held, for all respected his great integrity, and appreciated his sterling intellectual qualities and his likeable and generous nature.

Harry produced, or participated in the authorship of, over 100 outstanding scientific papers. He was Secretary of the Australian Entomological Society for the period 1967-69, and served on numerous specialist committees. He was Consultant in Insecticides and Filariasis to the World Health Organisation, and Consultant on Ticks to the Food and Agriculture Organisation of the United Nations. For his services to science he was awarded the Order of the British Empire in 1982. His election as a Fellow of the Australian Academy of Science in 1973, and of the Australian Academy of Technological Sciences in 1982, justly reflects his merits.

K.R. Norris
CSIRO Canberra

OBITUARY

RAMON MASCORD

The death of Ramon Mascord early in July 1983, marked the end of a remarkable career in natural history. Though by trade a signwriter (and a gifted artist) he devoted most of his spare time and energy to the study, first of reptiles and, later, of spiders. Ray's interest in snakes went back to his schooldays in Botany and later even extended to New Guinea where he served with the second A.I.F. He donated many specimens to C.S.L. for venom research and to the Australian Museum collections.

In the early sixties Ray began his study of spiders. A keen collector himself he also made contacts in many parts of Australia ensuring a steady supply of material. With typical tenacity he managed to familiarise himself with much of the scattered literature and spent many laborious hours identifying specimens and making notes.

Soon after this Ray began photographing spiders as a means of recording colour patterns which were quickly lost in alcohol. Over the years, at considerable expense, he amassed a remarkable collection of several thousand slides which will form a valuable reference resource for future workers.

Ray put his slides to good use in the production of three books on Australian spiders which not only popularised the group but contained much new information. He also published papers on spider melanism, mating behaviour, the new araneid genus Neoarchemorus Macord and a new mygalomorph Kiama lachrymoides Main and Mascord.

Ray was a life member of the Entomological Society of New South Wales and an Honorary Associate of the Australian Museum. His dedication and enthusiam will be missed.

Michael Gray
Australian Museum

BOOK NOTICE

"Entomology : a Guide to Information Sources" by Pamela Gilbert and C.J. Hamilton. Mansell Publishing Limited. 1983, 244 pp. Price £18 sterling. Obtainable post free from Sales Office, Mansell Publishing Ltd., 6 All Saints Street, London NI 9RL. UK.

This book is international in scope, covering 22 countries, and deals with a wide variety of information sources and services for the entomologist and librarian. Its scope is best illustrated by reproducing its chapter headings:

Introduction: Entomology past and present - the subject and its literature; history of entomology; early literature; insects in art, literature and gastronomy. Naming and Identification of Insects: taxonomy and nomenclature; nomenclators and catalogues; identification and faunists; common names of insects; dictionaries and glossaries of entomology. Specimens and Collections: cultures and mass rearing of insects; collection, curation and preservation; collecting codes; location of collections; entomological suppliers; entomological photography. The Literature of Entomology: primary journals, review journals; monograph series; books and review articles. Searching and Locating Literature: secondary journals; guides to theses and research; computerized information retrieval; locating source documents; libraries; dates of publication. Current Events: newsletters; conference calendars. Entomologists and Their Organizations: learned societies and membership lists; professional organizations; obituaries and biographies. Miscellaneous: translations; services and guides; apicultural information; biological control.

BOOK REVIEWS

"Drawing of New Zealand Insects" by Desmond Helmore. Bulletin of the Entomological Society of New Zealand (8). 1982. pp. 52. NZ$11.50.
"Photographing Insects" by Bruce B. Given. Bulletin of the Entomological Society of New Zealand (6). 1982. pp. 32. NZ$9.00. Obtainable from the distribution secretary: Mrs B.M. May, 6 Ocean View Road, Huia, NZ.

These two publications by the Entomological Society of New Zealand have an important application to entomology in the area of insect illustration. Only a limited number of students and researchers have access to the expertise of artists and photographers when presenting their work for publication. Many rely on their own skills and equipment to support the text, and too often the results fall short of the standard set in their research. These two publications will assist the entomologist to reach an adequate standard in drawing and photography.

The first, by Desmond Helmore, is more or less a folio of the author's excellent art work completed mainly for the Systematics Group, Entomology Division, DSIR at Auckland. A two-page introduction deals with the purpose and application of insect illustration; its use in conjunction with the microscope and photography, and the materials and techniques applied to produce clear and accurate drawings.

The folio is neatly produced, with 22 plates illustrating 24 New Zealand insects, some of economic importance and others which illustrate the uniqueness of the fauna. Each drawing is reproduced approximately to the original size, and on the facing page it is reduced to publication size. They clearly show the difficulties encountered in reproduction techniques, those plates being most effective are 1, 7, 8, 10, 16 and 21. Each plate is accompanied by a brief outline of the special drawing methods applied to produce the desired result and some information about the insect inself.

I would have like to have seen more detailed descriptions of the drawing techniques used for scraperboard, and a more thorough explanation of the particular problems associated with the use of perspective (e.g. plates 1, 4, 10, 14 and 22), liquid-immersed specimens, small or large insects, membranous sections; or the problems encountered when using microscopes, such as distortion, depth of field and measuring. A simple diagram illustrating the use of a drawing tube (camera lucida) would have been useful here.

The professional entomologist might make allowance for the simplified descriptions of insects presented in the text to accommodate the interests of the artist/reader. The bulletin would be very useful for all researchers with limited skills as an artist and a desire to learn by good example.

The second publication, by Bruce B. Given is designed to assist both the entomologist and the photographer. The basic techniques and equipment required for photographing insects are described. Practical advice is given for the amateur photographer on close-up and habitat photography. Some information is given on the processing of photographic materials and the preparation and presentation of illustrations and visual aids.

The bulletin again is well presented and the practical problems of lighting, depth of field and the movement of camera, subject or substrate are clearly outlined. Useful information is given for lens reversal, preparation of the subject and for studio and field photography. The author also provides practical notes for black and white film processing. An appendix on the presentation of photographic prints, slides etc. for lectures and publications is an important inclusion; one which is often neglected in similar publications.

The author, correctly, refrains from offering detailed advice in locating the insect subject in the field - too vast a topic for this booklet, and certainly a requisite of the individual specialist. Some techniques on this topic suggested by Given may be a little simplistic. I doubt if any lepidopterist would seriously consider the use of potted Buddlaea, carted into the bush, as an important technique in obtaining insects, though the late Mr G. Lyell may well have had some success with this method at certain times of the year for certain species.

However, this is small critism. This reviewer, being an amateur photographer found the booklet easy to read and effective and at a very reasonable price.

Andrew Atkins
Newcastle College of Advanced
Education, Waratah. NSW

SCIENCE IN NEW GUINEA

"Science in New Guinea" is the journal produced by the Science Faculty of the University of Papua New Guinea. It publishes material on Archaeology, Agriculture, Botany, Chemistry, Conservation, Fisheries, Forestry, Geology, Geophysics, Physical and Cultural Geography, Mathematics, Meteorology, Physics, Pollution, Science teaching and Zoology.

Scientific papers report results of original observations and research; letters and short notes deal with original observations including preliminary accounts, scientific issues, science teaching and the social implications of Science in New Guinea. There are also review articles and bibliographies on scientific topics concerned with New Guinea. The journal also publishes requests for information and assistance with specimens and/or material.

Three isues are published each year and current subscription rates in Papua New Guinea Kina are as follows:

Destination	Surface Mail	Air Mail
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Interested persons and institutions can contact the

Editor of Science In New Guinea
Biology Department
P.O. Box 320
UNIVERSITY
PAPUA NEW GUINEA

COMING EVENTS

17th International Congress of Entomology

The Second Circular has now been circulated for the 1984 meeting which will be held in Hamburg, West Germany during the period August 20-26th, 1984. This Circular outlines the full programme of symposia as well as all the tours and other conference related activities. The Circular and Enrolment Forms may be obtained from:

The Secretary
17th International Congress of Entomology
Zoologisches Institut der Universitat
Abt. Angewandte Okologie /
Kustenforschung - Biologiezentrum
Olshausenstrasse 40¢0
D-2300 Kiel 1
WEST GERMANY.

15th Annual General Meeting, Australian Entomological Society

The next AGM and Conference of the Society will be held in Mildura at the Sunraysia College of Technical and Further Education during the period May 12-15th next year. The Conference will be run in a similar fashion to previous ones. This year its major theme will be "Practical Pest Management". Full details are provided on the leaflet enclosed with this News Bulletin. This incorporates enrolment forms and application forms for the presentation of papers and displays. Forms must be returned by February 29, 1984.

The logo designed for the 1984 Conference depicts the predatory shield bug, Oechalia shellenbergii feeding on a larva of the grapevine moth, Phalaenoides glycinae The logo was drawn by Tim New from a photograph taken by Greg Buchanan.

RESEARCH REQUESTS

Australian Myriapods

Dr Bob Mesibov, Tasmanian Forestry Commission, Smithton, Tasmania, 7330, would like to hear from people interested in the Australian myriapod fauna. Bob is currently preparing a manuscript on the myriapods of Tasmania.

Psyllids from Geijera spp.

I, and others, would be grateful to any member who can collect psyllids from Geijera parviflora (wilga), or the coastal species of Geijera in Queensland or New South Wales.

There are four species on wilga, three of them now being described by Alan Yen or by me. The new species represent two genera not previously recorded in Australia. I am extremely grateful to Geoff Monteith for a recent batch of specimens from Goondiwindi, but we still have very few specimens of two species, and more would obviously be useful as paratypes.

The nymphs of one species form pit-galls in the leaves, so their presence is easily detected. Adults may be collected by beating, and also, I find it easy to get them by keeping the leaves in sealed plastic bags and collecting adults as they emerge. Nymphs and adults would be welcome, preserved in 80% ethanol. If pit-galls are present, send some leaves as well, to:

Keith Taylor
CSIRO Division of Entomology
Stowell Avenue
HOBART TAS 7000

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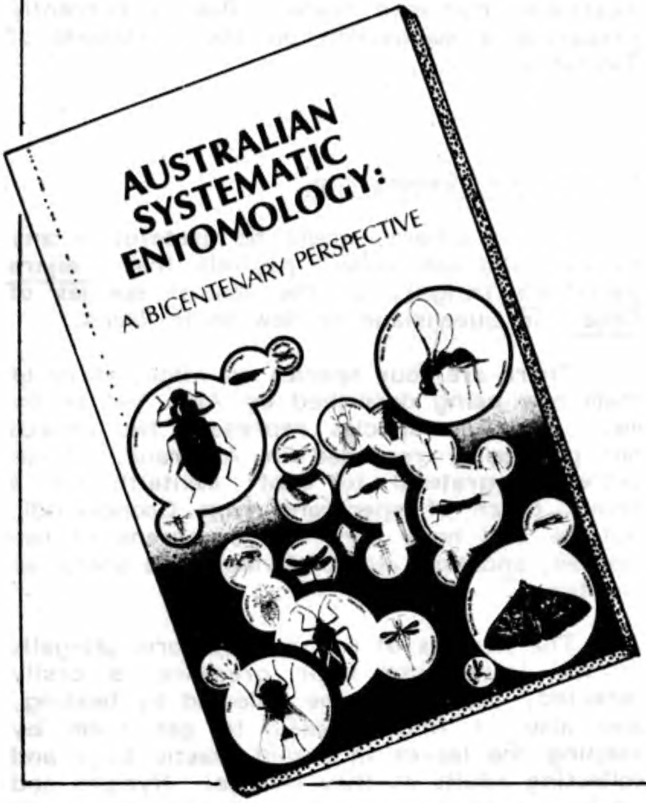
"AUSTRALIAN SYSTEMATIC ENTOMOLOGY : A BICENTENARY PERSPECTIVE" Edited E. Highley & R.W. Taylor.



This important Symposium, which was held in conjunction with the 13th Annual General Meeting of the Australian Entomological Society in Canberra during May 1982, has now been published by CSIRO in book form. The contents comprise:

Elizabeth N. Marks - Dramatis personae : an anecdotal account of some historial figures.

I.F.B. Common - Landmarks in the taxonomy of Lepidoptera.

J.A.L. Watson and F.J. Gay - Taxonomy and applied entomology of Australian termites : a small order in perspective.

T.R. New - Systematics and ecology : reflections from the interface.

R.H. Crozier - Genetics and insect systematics : retrospect and prospect.

R.W. Taylor - Descriptive taxonomy : past, present and future.

C.D. Michener - Systematics : an integrating discipline in biology.

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Nomination forms and further information are available from the address given below.

The award will be made in mid 1984 and nominations, giving full details of the practical application of the work and background of the nominee, together with the names of two referees, should reach the address given below by 31st December 1983.

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